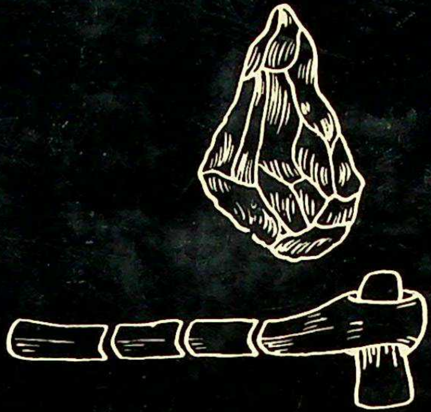

THE UPPER PALEOLETHIC CULTURE OF INDIA

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M.J. Sharma

THE UPPER PALAEOLITHIC CULTURE IN INDIA

Not approved.

The Upper Palaeolithic Culture in India

M.J. SHARMA
Archaeological Survey of India
Mysore

AGAM KALA PRAKASHAN
DELHI

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DEDICATED
TO
MY BELOVED PARENTS

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PREFACE

In the wake of discoveries from extensive surveys, excavations and studies by various investigators as well as governmental or quasi-governmental bodies in the field of Prehistoric Archaeology in India, a void in the sequence of cultures and chronology of Prehistory between Middle Palaeolithic and Mesolithic periods, has been seemingly filled up by the "Upper Palaeolithic" phase. It is time to enumerate, in the interest of the progress of Prehistory, almost all such sites and industries coming within the range of the Upper Palaeolithic phase and to make further intrinsic study of the phase in the light of their natural variations, evolution and chronology.

A humble attempt has been made here in this direction and it is open for comments and reviews by scholars.

The subject has been of a debatable nature for a long time. And the idea of an analytical study had occurred to me while I was undergoing the post-graduate Diploma course in Archaeology at the School of Archaeology, New Delhi in 1980. But to pursue the work in a short time, in the intended way, was not possible owing to the widely dispersed and not so easily accessible source materials. Hence, the present work is mainly based on published materials, including, as far as possible, the latest ones.

M.J. SHARMA

Mysore-570 005.
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I wish to record here my grateful thanks to the senior Archaeologist, Shri K.V. Soundara Rajan for the sustained encouragement I have received from him in my Archaeological pursuit.

I will be failing in my duty if I do not record here my grateful thanks to Dr. B. Narasimhaiah, Superintending Archaeologist, Excavations, Branch, Nagpur, who had created in me interest for the subject and encouraged me with invaluable suggestions.

I am equally indebted to my senior colleagues Dr. K.V. Ramesh, Chief Epigraphist, Archaeological Survey of India, Mysore and Shri S.P. Tewari, Deputy Superintending Epigraphist, Archaeological Survey of India, Mysore, who had constantly helped me and encouraged me in the preparation of this work for publication. I also express my grateful thanks to Shri B.S. Raman, Deputy Superintending Archaeologist, Northern Circle, Agra, for his kind help in the collection of materials.

I gratefully acknowledge my sincere thanks to Shri P. Natarajan who had helped me in the preparation of the manuscript. Also I wish to acknowledge the help rendered by Shri H.R. Raghunath Bhat in the preparation of line drawings.

Finally, I express my extreme gratefulness to the publishers, M/S. Agam Kala Prakashan, for bringing out this book neatly in a short time.

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CHAPTER I

Introduction

NEED FOR THE PRESENT STUDY

There was a time, about 25 years ago, when it was not believed that India passed from the Middle Stone Age to the Mesolithic Age through an Upper Palaeolithic phase, because traces of its existence, which had been noticed in different parts of India, were not convincingly enough for owing to the lack of definite evidences as to their stratigraphical horizons as well as independent existence.

In the Indian context, the industry was then referred to as blade-burin or blade-flake culture and soon. On the other hand, the Upper Palaeolithic phase in Europe, particularly in the western part of the continent, was well studied in its varying stages, evolving from the Mousterian cultures of Middle Palaeolithic phase to the Maglemosian culture of the Mesolithic, covering a geological period from middle to upper Wurm of the Late Pleistocene.

The earliest notice of this phase in India goes back to 1844 A.D. when the group of Billa Surgam caves in Kurnool, which was discovered by Captain Newbold, was excavated by Robert Bruce Foote and later by his son H.B. Foote leading to the recovery of a number of bone tools. The bone tools consisted of a few carved bones and teeth which were compared by Robert Bruce Foote with those of Megdalenian. Unfortunately, this valuable collection of bone artefacts was lost without any trace, thus depriving scholars to study and depend upon.

In 1930, Burkitt grouped Commiade's collection of lithic implements from the region of Nandi Kanama pass in Eastern Ghats (A.P.) into four series. Of them, Series III, consisting of blades, slender backed blades, burins (made on the thickness of flakes) etc. reminded him of their Upper Palaeolithic character. Somehow, the evidence was not seriously considered due to the lack of their definite stratigraphical relationship.

In 1932, K.R.U. Todd discovered at Dhok Pathan, a few miles from Pindi Gheb in West Punjab (now in Pakistan), a lithic site with pebble tools and discoidal cores being identical with the Sohan series, and flakes with convergent and parallel primary flaking being similar to those of Sohan 'A'. Paterson placed this industry contemporary with Late Sohan or even later while De Terra correlated it with terrace 4 of the Fourth Glacial in Punjab, as on the surface of it occur tools presumably of Upper Palaeolithic. Movius assigned it with a term 'Evolved Sohan'.

Another example of stratigraphical evidence came when Carlleyle excavating the Morhana Pahar cave shelter (Vindhya Pradesh) found microlithic yielding layers resting over a deposit which revealed large flake implements or 'Microlithic' assemblages. Observing them, V. D. Krishnaswami admitted that there was a later Upper Palaeolithic blade and burin industry corresponding to Magdalenian.

Again, Todd in 1939, discovered a stratigraphic evidence at Kandivili (near Bombay) indicating the existence of a blade and burin industry in the upper clay of the upper gravel. The industry was compared with those of Aurignacian of Europe and Middle East.

In 1949, the region of Eastern Ghats near Nandi-Kanama pass surveyed again by an expedition team consisting of F.E. Zeuner, V.D. Krishnaswami, K.V. Soundara Rajan and others, and discovered large number of Pre-historic sites. The collection made at Giddalur II revealed an assemblage dominated by Upper Palaeolithic tools.

These earlier notices, though some of them displayed ample evidences of stratigraphy and typology, could not bring scholars to a conclusion to accept a separate phase of the Upper Palaeolithic in India. To quote an opinion on similar lines, Krishnaswami[1] had observed, "thus, from the available evidence, there is no need to assume the presence of an independent Upper Palaeolithic in South India as the microlithic industries of that region can be derived from a hypothetical stand alone, since in North Africa and Aterian, a direct descendant of Levalloisan, passes into microlithic industries, such as the Cranian (Ibero-Maurusian)........."

The past two decades have changed the story altogether on account of the progress achieved by extensive surveys, excavations etc. in the Pre-historic field. Scholars from different regions established the presence of a separate phase of Upper Palaeolithic in India, by introducing a correlated stratigraphical and typological evidences. Mention must be made of the extensive surveys and excavations conducted by M.L.K. Murthy in Renigunta and Kurnool region (A.P.), Paddayya in Shorapur Doab (Karnataka), S. A. Sali at Patne (Maharashtra), V.S. Wakankar and V.N. Mishra at Bimbetka (M.P.), Dr. Mrs. Bridget Allchin and Dr. Andrew Goudie in Pavagarh and Pushkar areas (Gujarat and Rajasthan), G.R. Sharma in Belan valley (U.P.) and A.K. Ghosh in Singhbhum region (Bihar). Among them, while Sali's work at Patne disclosed a complete evolutional phase of Upper Palaeolithic between Middle Palaeolithic and Microlithic phases, Prof. G.R. Sharma's work in the Belan valley not only revealed a partial evolutional phase but also provided the very much needed chronological evidence *i.e.* C^{14} dates (see below), thus enabling to fix the Upper Palaeolithic phase in a definite chronological horizon of Late Pleistocene.

Though enough evidences have come forth to recognise this phase completely, scholars, some of them, were still hesitant to use the term 'Upper Palaeolithic' or rather they preferred to term 'blade and burin industry' for the obvious reasons that this phase, in comparison with Europe, had not fulfilled the requirements in the sphere of art tradition, and hence there is a general non-acceptance of the term in the context

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[1] *AI.*, No. 9, pp. 63-64.

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of Archaeology in Asia, as a whole. In the conference of Asian Archaeology, held in New Delhi in 1961, while considering the problem of terminology in Pre-history, it was decided to adopt the terms 'Early', 'Middle' and 'Late' Stone Ages. But discoveries in subsequent years, has changed the face of Pre-history and has called for revision in terminology in par with European cultures. In this context it will be appropriate to quote B.K. Thapar's[1] words. He observes, 'Since then (1961-62), considerable field work in Pre-historic and Quarternary studies has been done in India, and the position has appreciably changed : a blade-and-burin industry, recalling the Upper Palaeolithic of Europe has been identified in various regions of India, in stratigraphic horizons underlying the deposits belonging to the so-called Late Stone Age; and some similarities between the post Acheulean flake industries of the so-called Indian Middle Stone Age and those of the Middle Palaeolithic of Europe have been recognized. Both these factors call for a revision of the terminology agreed in 1961 and the adoption in its place the terminology of European Pre-history'.

Sankalia (1974) and Vidula Jayaswal in their books on Pre-history adopted the European terminology and as well, apportioned a chapter for the Upper Palaeolithic cultures.

Thus, now a stage has come, when the scholars have realised the existence of Upper Palaeolithic in the Indian sub-continent, to make further studies within its phase, in aspects of the natural variations, evolution and chronology.

Limitations and Scope

As the phase has just been realised, the materials for the study are restricted and limited when compared to the earlier two phases, Lower and Middle Palaeolithic. So also the data coming from explorations of the new sites which are not sufficient to depend upon.

With the discoveries from the last two decades and further discoveries to come, the study of Upper Palaeolithic in

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[1] *IAR.*, 1975-76, Preface.

India is bound to expand. On comparison with the European Upper Palaeolithic phase, technologically and chronologically, in India the exact parallels may not possibly be found owing to the diversity of environment and cultural cycles. But, within the phase in India, there will be enough scope to study the regional variations, evolution and chronology.

Method

The subject has been divided into four chapters (II, III, IV and V) under the headings of Distribution : Sites and Industries; General Observation and Chronology; Pattern of life, Art and Religion and Conclusion. In the ensuing chapter (II), a brief account of Sites and Industries are given. They are grouped State and Districtwise and in each District they are narrated in chronological order. Each site and industry is discussed in the order of its location, stratigraphical situation, raw materials, technique, assemblage, comparison and other observations, if any. In the next chapter (III), the classification of the industries by other authors and the present author is dealt with. For writing chapter IV, there is an acute paucity of materials, except for stray finds and doubtful examples. At the end, after conclusion (chapter V), there is a short list of terms connected with Upper Palaeolithic culture, appended with a Select Bibliography.

CHAPTER II

Distribution : Sites and Industries

ANDHRA PRADESH

KURNOOL DISTRICT

Some years before 1930, Commiade in the course of service under Government of India, toured along the region of Eastern Ghats and discovered a number of pre-historic sites, from where he collected a large number of stone implements. He, jointly with Burkitt,[1] classified these tools on the stratigraphical and typological grounds, as well as from a study of their state of preservation into four series.

Of them, Series 3 is characterised by the presence of slender blades with blunted backs, a few burins, planing tools and end scrapers.

Sites where series 3 were best found are at the eastern and western end of the Nandi Kanama pass. On the sides of the valley, there were deposits of red-clay overlain by red-sandy soil. The implements occur on the surface of the red-clay.

Among the tools of series 3, there were a number of knife-blades made on black lydian with fine blunting backs, core scrapers and a number of burins.

At Gundla Brahmesvaram'[2] an ashy bed with deposit of about one foot thickness overlying the laterite soil (4 feet thickness) and covered by forest soil, yielded a number of long flakes with faceted platforms, parallel flake scars and burins with double ends. The raw-material used for the burins was chert.

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1. L.A. Commiade and M.C. Burkitt : Fresh light on the Stone Ages in South India, *Antiquity*, Vol. IV, 1930, p. 327 ff.
2. *Ibid.*, p. 336.

Further examination of this region took place in 1949 by an expedition team consisting of Prof. F.E. Zeuner, V.D. Krishnaswami, K.V. Soundara Rajan and others. A report describing the Stone Age culture of the sites near Giddalur (Kurnool District), was published later on by K.V. Soundara Rajan.[1]

Among the sites, the site Giddalur II (near Narasimhakonda) where the section of the river Sagileru and its gullies containing gravel-stratum yielded Palaeolithic tools of the series II and III, besides, the tools of series I and IV (of Commiade and Burkitt classification). The Upper Palaeolithic tools dominate in this assemblage as is seen below in the typological inventory[2] of the tools.

Types	*Nos.*
Pebble tools	3
Abbevilleo-Acheulian handaxes ...	6
Acheulian handaxes	8
Cleavers	4
Clactonian flakes and flake scrapers	30
Proto-Levallois	10
Levallois	14
Bladish flakes	5
Coarse burinate tools	3
Cores and core scrapers ...	7
Total	90

The few burinate flakes, bladish flakes, slender blades with blunted backs, flakes (Clactonian and Levallois) and scrapers forming Upper Palaeolithic assemblage are smaller in size having minute retouch or steep secondary retouch along the working edges, surrated edges and truncated ends, and in some cases indicating the use of punched technique. Attention is drawn to

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1. K.V. Soundara Rajan : Stone Age industries near Giddalur, District Kurnool, *AI.*, 1950, No. 8, pp. 64-92.
2. *Ibid.*, p. 73.

the Aurignacian characters of a double end scraper with nibbled retouch and of an end scraper made out of a tongue shaped flake with its lower nose having fine nibbled retouch.

The materials used mainly in making of these tools are quartzite of brown, blue and green colour and greenish shale or lydianite.

Billa Surgam

In 1844, Captain Newbold was the first to notice Billa Surgam (approximately 4.5 km south-east of Betamcherla), one of the group of caves in the great lime stone areas of the Kurnool-Cuddapah-Dharwar system, being ossiferous, the first of the kind known to India. Subsequently an excavation at this cave was commenced by Robert Bruce Foote[1] and later it was completed by his son Henry Bruce Foote. The materials revealed in this excavation comprises :

(1) dental osteological remains of Late Pleistocene fauna representing Mammalia, Aves, Reptilia and Amphibia;

(2) a large number of specimens of worked and cut bones of which 200 were implements; and

(3) few potsherds and a couple of broken pots in the levels below the surface bed.

The bone implements were classified by Robert Bruce Foote into awls, barbed and unbarbed arrow-heads, spear or harpoon heads, daggers, scraper-knives, scrapers, chisels, gouges, wedges, axe-heads and sockets; a solitary bead of bone was also reported. Foote has compared the bone artefacts to Magdalenian of France and has also recorded the absence of the lithic implements among the finds.

Muchchatla Chintamanu Gavi

The paucity of lithic evidence (stated above) was filled up by the excavation at the cave known as Muchchatla

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[1] Robert Bruce Foote : *Pre-historic and Proto-historic Antiquities of India*, p. 190.

Chintamanu Gavi by M.L.K. Murthy[1] who has given a vivid account of the lithic and bone implements with faunal remains found in this Late Pleistocene site. The excavation revealed 3 layers with the following[2] frequencies of cultural and faunal remains.

Remains	Layer 1	Layer 2	Layer 3	Total
Cultural				
Lithic Industry	13	23	187	223
Bone-tool Industry	125	621	1257	2003
Faunal				
Dental	23	54	140	217
Osteological	7	15	51	73
Total	168	713	1635	2516
	6.66%	28.34%	65.00%	

Layer I also evidenced in the upper levels the occurrence of a solitary specimen of bottom-perforated broken bowl with Neolithic affinities, thus giving a clue that the deposit occurring below are of Pre-Neolithic.

The Upper Palaeolithic artificial material consists of a total of 2,226 specimens, of which 223 belong to the lithic industry and remaining 2,003 to the bone tool industry as shown in the Table above.

The Lithic Industry

The raw materials used are green lime stone, chocolate coloured compact shale, chocolate-brown chert and sand-stone. The artefacts are classified as :

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[1] M.L.K. Murthy : A Late Pleistocene Cave site in Southern India, *Proceedings of the American Philosophical Society*, Vol. 118, No. 2 (1974), pp. 196-230.

[2] *Ibid.*, p. 203, Table 1.

Flakes	...	57
Blades	...	91
Cores	...	12
Chips	...	60
Hammer stones	...	3

Only few specimens are subjected to secondary working or retouch. Flakes show indiscriminate nature of the negative scars on the dorsal surface and their irregular shapes show that they were detached from unprepared cores, by a stone hammer. Blades have nearly regular parallel scars on the dorsal suggesting the fluted-core-technique.

The Bone Industry

The collection constitutes 2,003 specimens from 3 layers and all the specimens have the same technological features. Their categories are as follows :

Finished forms

Scrapers	...	...	11 (7.29%)
Perforators	...	...	61 (40.41%)
Chisels	...	...	12 (7.91%)
Scoops	...	...	14 (9.29%)
Shouldered points		...	27 (17.88%)
Barbs	...	...	18 (11.92%)
Spatulae	...	...	8 (5.30%)
			151 (100%)

Other Categories

Worked bones	...	...	204 (11.00%)
Bone blanks	...	...	878 (47.40%)
Broken and cut bones		...	135 (7.30%)
Splinters	...	...	635 (34.30%)
			1852 (100%)

The bone implements are made on the shafts of long bones and Murthy observes that three methods have been followed in the technique of their manufacture.

(1) *Knocking off the epiphyses and transverse cutting* : Here the long bone selected for working is cleared of the epiphyscal ends by oblique striking on the shaft above the ends or by percussion flaking. Bones are transversely cut by chopping along the circumference at the desired point.

(2) *Longitudinal cutting* : Some examples indicate that parallel grooves are made along the long axis on a 'prepared-to-size-shaft'. Later splitting along these grooves is done. All finished forms occur on such blanks.

(3) *Lateral chipping and finishing* : Bone blanks are further shaped by lateral-chipping, probably to remove the roughness. Lateral chipping is done along the margins on the internal surface as well as external surface. The final finishing of the working edge is by pressure flaking and grinding.

A significant feature of the bone-tool industry is the fact that the long bones have been cut exactly as in the Upper Palaeolithic of Western Europe. The techniques which were observed in the manufacture of these implements were followed right from Aurignacian times in Western Europe.

Faunal remains

The cultural materials which were found along with faunal remains classified by Murthy under dental and osteological groups. A tentative identification of the dental remains made by Dr. K.N. Prasad, Palaeontologist in-charge, Geological Survey of India, Hyderabad has shown that they represent the following Late Pleistocene forms.

(1) Presbytis entellus			
(2) Carnivora	... ...	Viverra	Sp
		Felis	Sp
(3) Rodentia	... ...	Hystrix	Sp
(4) Perissodactyla	... ...	Equus	Sp
		Equus asinus	

(5) Artio dactyla	carvus	Sp
	Bos-elephas	Sp
	Bos	Sp
	Babalus	Sp
	Antilope	Sp
	Gazella	Sp

The absence of occupational floors, charcoal or ashes and accumulation of food refuse show that the cave was neither a kill-site nor a permanent settlement but a site frequented by the pre-historic man. It was observed by Murthy while concluding the report that the excavation

(1) "on one hand confirms the occurrence of bone implements along with Late Pleistocene fauna, as reported by Foote in Billa Surgam caves and on the other hand provides additional data on the associated lithic industry;

(2) favours provisional ascription of the blade-burin and blade-tool yielding open air station, to a terminal phase of the Pleistocene; and

(3) adds further weight to the view that several industries with a blade-and/or blade-tool component known from different parts of the country may represent a facies of the Indian Upper Palaeolithic."

GUNTUR DISTRICT

Nagarjunakonda : Nagarjunakonda in the Krishna valley was found to be a rich site for Stone Age and other cultures. Here, after an extensive survey and careful examination Soundara Rajan[1] observed a blade-flake and burin group being particularly prolific around the Tellarallabodu hill, over Locality E and blades and scrapers in very high frequency over the high ground covered with quartzite gravel, to the south west of Tellarallabodu and south east of the Kundellagutta hill (Locality E).

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1. K. V. Soundara Rajan : Stone Age of Nagarjunakonda, *AI.*, No. 14 (1956), pp. 49-113.

The raw materials used are fine grained quartzite and green or brownish jaspery chert and the techniques observed in the manufacture of these blades and flakes are pressure and punch techniques.

The Upper Palaeolithic group in the collection is characterized by the following.

(1) blade-flakes
(2) burins (a rich variety)
(3) blade-scrapers
(4) scraper-cum-perforators and
(5) awl points on thick triangular flakes and cores (with retouch).

Flake-blades and blades are found with primary and secondary flaking while the triangular or almond shaped flakes are found with finely worked edge and occasionally with incipient tang or shouldering.

Burins and Burin-cum-scrapers show retouch, nibbled retouch, notched scraper edge, trimmed and retouched margin.

Observing the delicate retouches on scrapers, points and burins Sankalia observes that these specimens do not come up to the classical blade and burin type of West or those of Chittoor and Kurnool Districts. While concluding, Soundara Rajan observes that Nagarjunakonda industry particularly shows, on one hand, a persistant blade-burin element and, on the other, a further ramification into diminishing sizes of delicately retouched scrapers and points as the evident forerunner of the Microlithic industry.

CHITTOOR DISTRICT

Renigunta

M.L.K. Murthy[1] who surveyed this part of the region gives a detailed account on blade-and-burin and Late Stone

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[1] M.L.K. Murthy : Blade and Burin and Late Stone Age industries around Renigunta, Chittoor District, *Indian Antiquary*, Vol. IV, Nos. 1-4, 1970, pp. 106-128.

Age industries, found in the sites situated towards the north-east of Renigunta, in the eastern part of Chittoor District of coastal Andhra Pradesh. The physiographical features of this part of this district comprises a plain land region much broken up by hills, spurs and offshoots and the most prominent are the Nagari hills terminating in the hills of Tirupati. Geologically, in this region the Archean rocks underlay the formations of Cuddapah and Kurnool series and the Nagari quartzites form the adjoining hills of Nagari, Tirupati and Kalahasti. Here flows the river Rallakalava, a mountain stream arising in the Tirupati hills and after flowing through a valley tract opens into a plain tract six kilometres north of the village Vedullacheruvu.

The river has preserved two aggradational terraces comprising gravels and silts respectively, yielding Early and Middle and Late Stone Age industries. The blade and burin industry and the Late Stone Age industries occur either on the eroded first aggradational terrace along the banks or in the areas slightly away from the river. The blade and burin and non-geometric Late Stone Age industries are recovered from (1) various localities around Vedullacheruvu and (2) Nallagundlu while the blade-and-burin industry alone occurs exclusively at (3) Timmayyanigunta, (4) Venkamanayanipalli and (5) Chundi.

In the first two sites industries of both traditions are confined to workshop centres.

In Vedullacheruvu Locality which extends upto 6 km upstream yields industries occurring on the surface of the eroded first aggradational terrace on concentrated spots and they can be easily distinguished by their size and raw material which is fine grained quartzite in the case of blade and burin and milky quartzite in case of Late Stone Age industry.

Nallagundlu is a rich factory site of both blade-burin and Late Stone Age industries. By scraping of the sections here, in an area of 12 square feet which was divided into sub-squares of four feet each, labelled as NGL-A, NGL-B, NGL-C and NGL-D, M.L.K. Murthy discovered blade and burin industry which occurs exclusively in 8 inches deep from surface. Although it occurs in small number on the surface alongside with Late Stone Age tools, the exclusive occurrance below the surface proves graphically that the blade-and-burin industry was older than that of the Late Stone Age.

Timmayyagunta is 2.3 km north of Renigunta and Venkamanayanipalli is situated a few kilometres away from the former, while the last mentioned site Chundi is situated few kilometres east from Renigunta. In all the three sites, the artefacts of blade-and-burin industry do not occur prolifically.

The method involved for production of blade here is fluted core technique which appears to be a further development of the prepared core technique. Some tools are made on flakes and cores such as scrapers and choppers. The blades are long, massive as well as slender with parallel or irregular sides having one or more longitudinal ridges on surface, exhibiting triangular, trapezoidal and sector like (like an orange piece) cross sections.

The blades vary in length from 11 to 105 mm but the average would be 36 to 40 mm, likewise the breadth/length index would normally be between 36.40 mm.

The raw material as stated above is mostly fine grained quartzite of olive green shade though medium to coarse grained quartzite is also used. A few tools were also made on milky quartz, crystal and black lydianite.

From the above sites, the collection of specimens from the surface as well as from the trial excavation runs into 5993. Of these 1279 come from the excavation (after rejecting 1864 specimens including chips, broken pieces and nodules).

Finished tools		*Nos.*		*Percentage*
Burins	...	131	forming	16.24
Blacked blades	...	532	... ...	67.3
Awls	...	30	... ...	3.7
Points	...	16	... ...	2.0
Choppers	...	27	... ...	3.2
Scrapers	...	63	... ...	7.56
	Total	799		

Blades ...	...	1170	forming	19.3
Other Categories				
Primary flakes	...	102	... ...	2.65
Flakes ...	...	215	... ...	5.45
Core flakes	...	379	... ...	9.57
Cores ...	...	191	... ...	4.74
Chips ...	...	3137	... ...	58.29
	Total	4024		

Interestingly enough, in addition to the above two categories, the working centres Vedullacheruvu, Locality—6 and Nallagundlu have yielded anvils and bored stones.

Burins : Of the finished forms, the number of burins is said to be the largest so far found anywhere in the Indian subcontinent. In size and shape they have the similarity with the European and West Asian types. They are made on thick blades, core flakes, cores and nodules. The burin edge is always present on the robust side of the implement, which is obtained by the removal of one or more spalls, either vertically or obliquely or in different angles along the longitudinal plane, transverse plane and the margins. Mostly, the burin edge is confined to one end though there are a few double edged specimens.

Murthy has classified them according to the technique of their manufacture and shape and also following the classification of Noone, H.V.V. into following groups :

Central	30
Bevel	44
Rectangular	29
Concave	6
Convex	20
Incomplete	2

The features are determined according to the spalled order.

Central : The burin edge is produced by one or more oblique spalls from each side and opposed to each other.

Bevel : The burin edge is achieved by detaching a vertical spall opposed to an oblique spall which is single or multiple.

Rectangular : These are characterized by transverse spalls opposed to a vertical spall with an angular burin edge.

Concave : Edge shows a concave spall opposed to vertical spall.

Convex : These have a incurved burin edge effected by the opposition of a convex spall to a vertical spall.

Backed Blades : Of the finished forms this is the second largest group of tools revealing triangular, trapezoidal and sector like (like an orange piece) cross section. Tools with sector like cross section show flaking on dorsal surface and the ventral surface is flat with a single flake scar. These are characterized by minute blunting, coupled sometimes with secondary trimming on one side which is either steep or slanting. Blunting is generally present along the length on a convex or one of the straight sides but at times confined to the base or the tip region or both. The nature of blunting and the tool forms give the following types.

(*i*) *Points*

- (a) Convex back
- (b) Straight back
- (c) Backed tip
- (d) Backed base and
- (e) Backed base and tip

(*ii*) *Pen-knives* : These are thick, massive and robust with steep blunting along the length.

(*iii*) *Lunates*—(in large or macro size)

(*iv*) *Triangles*

(*v*) *Trapezes*

Awls : These are made mostly on flake but some are also made on blade, core flake and core; characterized by delicate retouch on the dorsal surface at the point. The awl point is produced in some cases by a notch on either side.

Points : These are of considerably big and robust in size made on flake and core with a finish of bold retouch. It is suggested that the flattening of the ridge on the dorsal surface and the thinning of the butt ends show that they might have been used as spear heads.

Blades : These are long and slender with one or more ridges on the dorsal surface having sharp sides with no trace of retouch. They comprise the following types :

- (a) Pointed
- (b) Parallel-sides
- (c) Irregular
- (d) Shouldered

The shouldered variety might have been hafted in a narrow bone or wooden handle. Some also bear battered edges showing signs of use.

Choppers : These are tools with bold flaking along the working edge with a navvy or straight profile. These are made of either core or split pebble or even on thick flakes.

Scrapers : These are variously made on

(a) Flake
(b) Core-flake
(c) Blade
(d) Flake-blade
(e) Core
(f) Nodule

and they are typologically classified into

(a) side-scrapers
(b) end scrapers
(c) side and end scrapers
(d) ovate scrapers
(e) round scrapers

The blades and burins together form over 35% of the total while the choppers, scrapers, points and awls together make only about 16%. This proportion leads to conclude that the Rallakalava man depended upon blades and burins which might have been used for hunting and collection of roots and fruits. The presence of the small percentage of the lunates, triangles and trapezes as well as pen-knife blades and other points among the blades assemblage indicates the direction of the industry succeeded further.

It is surmised that typologically the blade and burin industry are in no way different from those found in Upper Palaeolithic caves and rock shelters of Western and Eastern Europe. Murthy also observes, "burins are most akin to those that occur in Aurignacian and Magdalenian; Upper Aurignacian of Linsenburg in Germany; Grimaldian of Italy; Antelian of Levant; Kostenki II, III, and IV and Borshova II of the U.S.S.R.; and Dabban industry at Hagfet-ed Dabba and Menchian near the centre of Kom-Cmbo plains in North Africa". The straight back and curved back blunted points and the end-scrapers on blades are compared to the Chattelperronian and Gravettian types.

CUDDAPAH DISTRICT

Vemula

Vemula village is about 10 km south-east of Pulivendla town. Here, K. Thimma Reddy[1] collected artefacts from the foot hills lying in the east-west direction to the Vemula tank. He observes the distinction in raw material and typology from that of Middle and Late Stone Age industries. Chert which is available in the shape of pebbles derived from the nearby conglomerate small hillock is used as raw material; while a change in the raw material is noticed only during the Late Stone Age in Eastern and Northern parts of the district.

The technique employed in the manufacture of tools is stated to be 'bone-billet' or 'punch' method and in most of the cases oblique retouches are found except in some cases retouches are steep.

The tools are grouped under (A) Flakes; (B) Blade Flakes and (C) Blades. And typologically they are further classified as follows :

Tools on Flakes : These are irregular flake tools. Some possess facetted platform.

(i) Unilateral
(ii) Bilateral
(iii) Terminal
(iv) Convex
(v) Rounded
(vi) Pointed

Blade Flakes : These are stated to be end struck and with parallel sides, the length being atleast twice the breadth. Some have facetted platforms. The types are :

(i) Unilateral
(ii) Bilateral
(iii) Terminal

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[1] K. Thimma Reddy : Vemula Industry in Cuddapah Basin, *Indian Antiquary*, Vol. IV, Nos. 1-4, 1970, pp. 227-238.

(iv) Concavo-convex
(v) Points
(vi) Burin or chisel edge
(vii) Rounded

Blades : Majority of them are small in size and are made on chert and a few in chalcedony. They are grouped as :

(i) Unilateral
(ii) Bilateral

The cores are prismatic and there are a couple of blade-flakes with chisel edge and a true burin with bevel edge.

Comparatively, Thimma Reddy observes. that the blade element at Vemula is higher than in the Middle Stone Age industries and also distinct from Middle Stone Age and Late Stone Age industries. Therefore, he concludes that this distinct Vemula industry suggests a transitional phase between the Middle and Late Stone Age. Sankalia adds to the view that morphologically this assemblage with a tendency towards blade element, should be assigned to (initial stage of) Upper Palaeolithic period.

PRAKASAM DISTRICT

Yerragondapalem

The village is situated in the Markapur Taluk and the region around formed by the extension of Nallamalai hills (a part of the Eastern ghats) is made up of Sri-sailam quartzites. Here, Thimma Reddy observed that among the layers of the terrace formed by a streamlet Cheruvu Vagu around the hill, the top layer was formed by dark brown silt over a pebbly gravel which is exposed in heaps in some places due to erosion. These heaps were evidently exploited by the blade and burin makers. The site reveals tools of earlier periods which are often rolled and patinated while the blade and burin industry look mint-fresh.

The industry was divided as follows :

(A) *Finished Tools*
    (a) *Choppers*—small, unifacially worked, a few bifacial.
    (b) *Scrapers*—made on parallel sided, irregular blades and flakes.
    (c) *Back blunted blades*—They are subdivided as :
        (i) Pen-knife blade (Straight and oblique)
        (ii) Backed points (with straight and convex blunted back)
        (iii) Lunates
        (iv) Triangles
        (v) Trapezoids
    (d) *Knife edged-blades*
    (e) *Burins*—They are subdivided as :
        (i) Central
        (ii) Bevel
        (iii) Convex
        (iv) Rectangular
    (f) *Points* (leaf shaped and simple)
    (g) *Awls*
(B) *Blades*
(C) *Other categories*
    (a) Cores
    (b) Core flakes
    (c) Flakes
    (d) Chips

Conclusively, Thimma Reddy points out that typologically and morphologically the industry at Yerragondapalem is no way different from that of Renigunta and falls into the same complex geographically, culturally and chronologically.

VISHAKAPATNAM DISTRICT

Dr. Thimma Reddy and other members of the Andhra University, Waltair,[1] are reported to have discovered a number of Stone Age sites within the radius of 30 km from Vishakapatnam. During the observation, it was noticed that the section of the river at Boyapalli revealed 3 gravels, each capped with silt. Of them, the lower and the middle do not seem to be implementiferous, but the third one which is sealed by red silt of varying thickness was found to be the horizon of Late Stone Age artefacts. The artefacts were found exclusively on chert and basalt and can be classified as :

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[1] *IAR.*, 1973-74, p. 8.

blades,
burins,
points. and
scrapers besides,
mace-heads,
stone-balls and
tablets

KARNATAKA

BELLARY DISTRICT

At Sanganakallu, B. Subba Rao had noticed the Lavallosian element in Phase I, with its heavily patinated flakes of trap and sand stone, associated with a crude microlithic industry of quartz and chert. The long trap and the sand stone flakes here indicate conical cores, and the technique is the same as is revealed in microlithic blades also. Hence Seshadri,[1] opined that this post-palaeolithic industry would be no more than a "macrofacies" of the Microlithic blades.

BIJAPUR DISTRICT

Shorapur Doab

During 1960-61, A. Sundara[2] discovered microliths and blade tools at Salvadgi, Matkandadevanahalli and Kuchval.

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[1] *AI.*, No. 9, p. 63.
[2] *IAR.*, 1960-61, p. 64.

The assemblage included scrapers, parallel-sided blades and fluted and other cores.

Subsequent to this discovery, Seshadri[1] visited the Salvadgi site, a workshop site and made a descriptive study of the artefactual material collected on the surface. On the basis of typo-technology, he classified them into two different industrial traditions *viz.*

(i) a flake and flake-blade industry of the Middle Stone Age complex and

(ii) a true blade-tool industry of the Upper Palaeolithic type

The above mentioned site Salvadgi is situated in the region known as Shorapur Doab, a beak-shaped tract of country formed by the confluence of Krishna and Bhima rivers. Morphologically the region is lime stone plateau with a thick cover of reddish black soil.

K. Paddayya[2] (1968) took up an extensive survey of this region and also conducted trial excavations. He discovered a larger workshop site (7 to 8 acres in extent) at Meralbhavi, about 2 miles south of Salvadgi. From the sample collection of 963 specimens, 321 were found to be waste products, 196 were of Middle Stone Age industry and the remaining 446 specimens were of blade-tool industry, thus confirming Seshadri's view the presence of two distinct industries.

To get a stratigraphical evidence, Paddayya conducted a trial excavation at Salvadgi and a close examination of the sections of the bank of rivers Don and its tributaries, lying to west of lime stone plateau. The latter work rewarded in giving stratigraphical evidence. To the south of Salvadgi workshop site, a section of the right bank of a tributary of the Don river revealed a 2 feet thick deposit of black brown silt. The deposit was kankary and found mixed up with chert nodules and yielded artefacts of which excepting the two examples of flake complex, all belong to blade tool industry.

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[1] K. Paddayya : The Blade-tool Industry of Shorapur Doab, Peninsular India, *Indian Antiquary*, Vol. IV, 1970, pp. 166-67.

[2] *Ibid.*, pp. 165-90

Paddayya obtained further and more stratigraphical data through the discoveries of a large number of stratified sites on the Hunsgi nullah and its tributaries lying to the eastern side of Salvadgi Meralbhavi plateau. The stratigraphical column revealed fine successive layers commencing from bed rock to the surface. The preceding layer to the surface (which yielded Late Stone Age tools—microliths) is about 10 inches thick deposit of black brown silt with lenses of loose granular gravel which yielded blade and burin tools. This evidence was noticed at Meralbhavi, Gulbal, Beuhatti and Hunsgi, all lying within a distance of 4 to 5 miles from the workshop site of Salvadgi and Meralbhavi.

The raw material used is exclusively chert with mostly reddish brown colour and the artefacts are stated to be in mint-condition with no physical or chemical change. Other minor colours are noted to be yellow, red and blue.

For the manufacture of the tool, the flat bodied nodules of chert from the veins were utilized as nuclei. The method of flaking adopted here was fluted core technique with prepared single (mostly) or multiple platforms. Removal of blades or long thickish flakes was done by direct or indirect (punch) technique. Paddayya observes that some of the tools were subjected to secondary working and fashioned into tools of various types. The secondary working on the tools by the way of

(a) strengthening of working ends by simple trimming (edge retouch) executed with a pointed piece of bone or wood,

(b) steep, protective blunting of margins intended for facilitating the insertion of tools in wooden or bone hafts, and

(c) burin facetting involving the removal of thin and narrow slices from the blanks.

Paddayya classifies the assemblage of finished tools by grouping them on the basis of the nature of the working or business ends under

(i) Edged tools
(ii) Non-edged tools and
(iii) Multiple tools

Functionally and typologically these tools would fall into *scrapers*—straight hollow and steep or nose, *backed blades* and *burins*.

(i) *The Edged tools* comprise

- (1) Blades (straight edge)
  - (a) single edged
  - (b) double edged
- (2) Transverse edged blades
- (3) Lateral-cum-transverse edged blades
- (4) Notched blades
- (5) Lateral edge-cum-notched blades
- (6) Transverse edge-cum-notched blades
- (7) Backed blades
- (8) Nose edged tools
- (9) Blade sections
- (10) Burins (mostly made of blades, but some on flakes, cores and nodules)

  They are sub-divided into
  - (a) Single blow burins
  - (b) Bec-de-flute burins
  - (c) Polyhedral burins
  - (d) Angle burins
  - (e) Busked or beaked burins
  - (f) Tiny burins
  - (g) Flat burins

(ii) *The Non-edged tools* comprise

- (1) Points
  - (a) Simple
  - (b) Tanged
- (2) Borers

(iii) *The Multiple tools* are

(1) Notched blade-cum-point
(2) Straight edge blade-cum-borer

Paddayya opines that this blade and burin industry of Shorapur Doab can be compared closely with Rallakalava (A.P.) industry on the grounds of predominence of blades and thin size though it is admitted that there are certain differences in the spheres of typology and technology and that the latter industry bears evidences of better workmanship.

Noticing the absence of refinement in blade and burin industry or absence of true blades and the presence of multiple tools, such as blade-cum-borer and point, Sankalia views that the Shorapur industry still leans heavily on its earlier antecedents and typologically it should be regarded as slightly earlier than the true blade and burin industry from Renigunta and Yerragondapalem.

MAHARASHTRA

BOMBAY

The earliest evidence of the blade and burin industry was brought to notice by K.R.U. Todd[1] in the coastal region of Bombay at place called Kandivili. He noticed a stratigraphic succession of clay gravel, clay gravel and clay. The upper clay of the upper gravel below the surface yielded the blade and burin industry with such types as

Poly hedral and
angle burins and even
parrot beaked types

which according to him belonged to 'a more evolved class of blade and burin industry' and were compared to Aurignacian types of Europe and Middle East.

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[1] *AI.*, No. 9, pp. 63-64.

The industry comprises tools like

steep scrapers,
burins,
borers,
blades,
blade-cores,
knives, etc.

D.H. Gordon[1] compared stratigraphically, the upper clay and the top of the upper gravel of the Kandivili with the upper and lower phases of Nandi Kanama (A.P.) series 3 of Commiade and Burkitt. On the surface the microlithic industry was found.

S.C. Malik[2] who re-examined the area, found at Borivili a similar industry. The tools, which were made of minerals of quartz group, were grouped as 'flake-blade-scraper' industry consisting of side scrapers, end scrapers, borers, blades, etc. But among them burins are rare. Malik holds that typologically the industry is similar to the Upper Palaeolithic of Europe.

AHMEDNAGAR DISTRICT

Nevasa

In 1956, exploration in Godavari-Pravara basin conducted by the Deccan College Post-graduate and Research Institute, under Sankalia[3] established two succession of Stone Age industries respectively called

Series I : Consisting of handaxe, cleavers, flakes, discoid cores or hammer stones and handaxes on cores of Acheulian Industry and

Series II : Comprising comparatively smaller flakes, cores, blades, scrapers, burins, points and Levellois flakes.

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[1] *AI.*, No. 6, p. 65.

[2] *IAR.*, 1956-57, p. 78.

[3] *Ibid.*, 1955-56, pp. 4-5.

Series II was compared in type with Middle and Upper Palaeolithic of Europe and Africa.

The blades and burins were thick and long made on chalcedony. Sankalia observes, "since these were quite different typologically from microlithic and chalcolithic blades (which were invariably thin), these few tools were assigned as Series III, with the hope that, in future, stratigraphic evidence would be available for this industry".

DHULIA DISTRICT

S.A. Sali[1] discovered a fine section at Bhadne in Kan-basin and at Gonda on the Panjhra (only 2 km south west of the localities VI and VII of Bhadne). At the former site, the second gravel yielded tools on jasper and chalcedony, including fluted cores, a parallel-sided blade, burin, scrapers and flakes.

At Gonda the collection comprises

(i) Fluted cores
(ii) Small discoidal cores
(iii) Blades and tools on blades sub divided as
    (a) Backed blades
    (b) Fully retouched blades
    (c) Obliquely blunted or pen-knife blades
    (d) Backed point on blade
    (e) Blade flakes
(iv) Burins
(v) Awls
(vi) Points
(vii) Scrapers

At Sarangkheda,[2] Shahada Taluk, Sali again observed in the patches of alluvio-colluvial gravel preserved on the slope of a basalt outcrop in the Tapti valley, deposits containing fresh artefacts belonging to late Upper Palaeolithic or the Mesolithic.

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[1] Sankalia : *PPIP.*, p. 226.

[2] *IAR.*, 1973-74, p. 21.

The artefacts include debitage and occasionally fluted cores and blades, chiefly on chalcedony. The freshness and the large quantity of tools indicate that the site represents a 'factory site'.

JALGAON DISTRICT

Sali's later work at Patne, Chalisgaon Taluk in this district proved to be most valuable.

The village Patne is situated on the left bank of the Adnala, a feeder stream of the river Tittur, the latter a southern tributary of river Girna which is one of the major tributaries of the river Tapti. About one km south of the village runs the Ajanta Hill range. On the southern sloping face of this range occurs an 'amphitheatre-like' depression measuring about one km east-west and 1.5 km north-south.

Within the above mentioned depression and also along the foot of the hill range south of the village occur massive fluvial deposits. Scraping of sections in 1971-72 in this area south of the village, called as Area 'A' revealed a sequence of Stone Age industries from Middle Palaeolithic to Mesolithic through Upper Palaeolithic. Further, excavations in Area A and in the Amphetheatre area, called Area 'B' in 1972-73 by laying in all 14 trenches called PTN-6 to PTN-19 exposed a 10 metre thick deposit. With a sequence of layers 1 to 13 as follows :

(1) Dark brown gravel
(2) Brownish calcareous clay
(3) Fossil soil
(4) Reddish brown current bedded sandy fine gravel
(5) Yellow kankary silt
(6) Brown sandy fine gravel with occasional round pebbles and boulders
(7) Dark brown fissured clay
(8) Brownish grey calcareous sandy fine gravel
(9) Brown silt clay

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1. Sankalia : *PPIP.*, pp. 226-28.

(10) Calcareous gravel
(11) Highly calcareous gravel
(12) Reddish sandy and silty fine gravel
(13) Weathered Basalt

Except layer (3) Fossil soil all fluvial deposits yielded small artefacts consisting of finished tools as well as devitage.

The cultural evidence was divided basing on stratigraphy and the study of finished tools, into periods as follows :

Patne I—Middle Palaeolithic

Patne II—divided into 4 sub periods

- Patne II A
- Patne II B
- Patne II C
- Patne II D

} Upper Palaeolithic

Patne III—sub divided into

- Patne III A
- Patne III B

} Mesolithic

Patne I : Layer (12) overlying weathered basalt (layer 13) yielded the Middle Palaeolithic tools made out of chiefly jasper.

The industry comprises

Scrapers
Points
Borers
Retouched broad blades
  a few, blade-flakes

Patne II A : Layer (11) differs from the previous one in producing an industry of

a thick backed knife,
an end-scraper on a broad,
broad and thick blade, and
burins

There is a slight increase in the blade element and a sudden decrease in proportion of scrapers and flakes. Though the raw material continued to be jasper, the phase is stated to represent a formative stage of Upper Palaeolithic.

Patne II B : Layers (10) and (9) reveal an increase in blades and blade tools. Blades are thick, broad and long and the raw material continues to be jasper. The finished tools include :

(a) backed blades
(b) finely retouched blades
(c) end scrapers on blades
(d) borer on a long, broad and thick blade
(e) burins on thick flakes and blades
(f) scrapers on flakes,
(g) fluted cores (both prepared and unprepared with natural flat striking platforms).

Patne II C: Layers (8) and (7) show some important features of this sub-phase which are :

(i) a change in the chief raw material from jasper to chalcedony and
(ii) smaller sizes of blades and blade-tools compared to those of the preceding phase.

Besides, it yielded enormous quantity of waste products and the collection includes over 300 finished tools and more than 100 fluted cores.

The assemblage is dominated by blades and tools made on blades. The burins are made on blades, flakes and cores. They are nearly 100 in number while the blades go over 500 in number. Among the blade tools points, some of them with tang and scrapers are to be noted.

Also noteworthy is the important find of a disc-bead made on a fragment of an ostrich-egg-shell, which is the first and the earliest ornamental object of the Upper Palaeolithic man so far found in India.

Patne II D : Layers (6) and (5) represent the end-phase of the Upper Palaeolithic in Patne as they reveal evidences of the beginnings of the succeeding Mesolithic period.

Chalcedony continues to be the raw material and the distinguishing feature is the occurrence of a very small proportion of geometric forms such as triangles and trapezes besides lunates.

The dominating lithic tools of the industry are blades and blade tools such as burins, points and scrapers. The types of blades are steeply backed, pen-knife and minutely retouched. Majority of the burins are made on blades but some are on flakes.

Patne III (phases A and B) : Layers (4) to (1) belong to the Mesolithic period wherein a marked deterioration of quality of the tools is to be noted.

Thus the excavation at Patne reveals the evidences of a complete Upper Palaeolithic phase intervening the Middle Palaeolithic and the Mesolithic periods, with its stages formative, full fledged and transitional. In other words, as Sankalia puts it, "there is no doubt that here at Patne we have an excellent evidence for the evolution of Microlithic Industry from an earlier Middle Palaeolithic through the Upper Palaeolithic".

Central Godavari Basin

Explorations in the districts of Aurangabad, Bhir, Nanded, Osmanabad and Parbhani[1] along the central Godavari basin of Marathawada region were carried out by Prof. R. V. Joshi, Dr. S. N. Rajaguru and others. The work yielded Middle and Upper Palaeolithic sites with a *fossiliferous strata*.

Extensive collection of Middle and Upper Palaeolithic tools was made from the stratified sites at Akhatwada and Shankatirth. Besides, tools were collected from bed of the river Godavari at Gangakhed, Manjlegaon, Mungi, Rahegaon, Rakshasabhuvan and Shankatirtha.

The sites at Bhokar and Kivala are the factory sites of Middle and Upper Palaeolithic industries.

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[1] *IAR.*, 1975-76, p. 34.

GUJARAT

For a long period, it was believed that Gujarat proved to have contained only Microlithic sites but not Middle or Upper Palaeolithic sites. But the recent discoveries of fossil sand dunes east of Baroda with microlithic and Upper Palaeolithic industries, have disproved it.

These fossil sand dunes are described to be constituted some of the most impressive aeolian land forms in central Gujarat and are associated with the Chota Udaipur escarpment and its outliers.

A massive windward accumulation at Pavgarh Hill measuring about 2 km long and 1 km wide resting on a gentle slope pediment running down to the Dhadar river bears the features of a fossil dune. Another small dune, approximately measuring 150 to 250 metres long and 6 metres high lying south of Pavgarh Hill, to the lee of the line of hills running south towards the Orsang river (a north bank tributary of the Narbada) also bears features of a fossil dune.

Explorations of several dunes in this area were conducted by Dr. (Mrs.) Bridget Allchin and Dr. Andrew Goudie who concluded that these fossil dunes at Pavgarh hills contained tools within a depth 1-2 metre from the top and Microliths on the top of the dunes, thus indicating the existence of 2 industries of the Stone Age cultures *i.e.* Upper Palaeolithic and Mesolithic (microlithic). The former culture flourished in a period of aridity was in progress but aridity had ceased before the arrival of Microliths.

Visadi

On the north east side of the dune of Visadi, an exposed section on a strip approximately measuring 100 × 30 m. bears the archaeological evidence of an industry which is considered to be homogenous technologically. The industry distinguishes from the microlithic industry on the grounds that

(i) the flakes, blades and cores are thicker and massive;
(ii) the technique of the striking blades and flakes is by direct rather than indirect percussion; and
(iii) it contains Upper Palaeolithic types of burins.

Burins are stated to be made on tabular pieces of quartz, the straight sides and corners providing natural striking platforms for the removal of burin spalls. The removal of spalls is done from an acute angle from two directions and thereby results in leaving almost a right angle between the striker's platform and burin facet.

Sankalia views that the collection here is not fully representative or it falls below the classical group, while the authors Dr. (Mrs.) Bridget Allchin and Goudie think that the Upper Palaeolithic industry at Visadi may lie somewhere between 40,000 and 12,000 B.P.

RAJASTHAN

Budha Pushkar

Similar work of explorations of the fossil sand dunes were carried out by Dr. (Mrs.) Bridget Allchin and Dr. Andrew Goudie[1] in Rajasthan also. Their observation of Pushkar basin (10 km north west of Ajmer) in one of the head water valleys of the Luni-river throws light on the existence of Lower, Middle and Upper Palaeolithic cultures.

The formation of the deposition of thick layers of aelian material (median diameter about 0.148 mm) which cover the sides and the floor of the valley is described to be due to the prevailing South Westerly summer wind which blows straight upto the valley resulting in the sand movement. It is said that the liner dunes, in some places, block the valley and impede drainage, leading to the formation of small lake basins containing fresh water. Budha Pushkar is stated to be one such lake.

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[1] Dr. (Mrs.) Bridget Allchin and Dr. Andrew Goudie : Pushkar : Prehistory and Climate change in Western India, *World Archaeology*, Vol. 5, No. 3, Feb, 1974, pp. 358-68.

In the basins of Budha Pushkar and Hokhra a continuous sequence of cultural remains extending from the Lower Palaeolithic to Chalcolithic and modern times was observed.

Classical analysis of the soil deposits in this sequence revealed that they are the products of high rain fall conditions, compared with those of the present day, leading to complete decalcification, clay formation and iron precipitation. The buried soil which provides a compact and stable surface is found exposed in number of places in the Pushkar area revealing on the surface both Middle and Upper Palaeolithic factory sites with many tools and waste products in clusters, thus indicating their being undisturbed ever since the departure of their makers. The Upper Palaeolithic sites are found in profusion around Pushkar but are very rare in the Dry zone. (See Pl. XVI) for a schematic interpretation of the Late Pleistocene stratigraphic and cultural sequence at Pushkar.

The raw material used by both Middle and Upper Palaeolithic men is the fine grained quartzite which is available in the nearby hills. The assemblage of tools at Budha Pushkar is classified into the following types (Also see Pl. XVII).

(1) Blade cores
(2) Flake cores
(3) Blades
(4) Blade core tablets
(5) Longitudinal blade core trimming flakes
(6) Burins
(7) Burin spalls
(8) Scrapers
    (a) keeled
    (b) hollow
    (c) convex
(9) Cleavers

(10) Awls
(11) Composite points and barbs

The above industry is considered to bear close resemblance with the parallels in Western Asia and in North-Central India.

MADHYA PRADESH

REWA DISTRICT

Earliest evidence of the Upper Palaeolithic phase in this region was shown by Carlleyle who excavated the Morahana Pahar,[1] (Vindhya Pradesh) and found microliths stratified over the deposits consisting of larger flake implements (blade and burin industry).

Upper Son Valley (Sidhi and Shadol Districts)

Another clue of the existence of a blade industry in the Upper Son Valley was given by Nisar Ahmad's discovery of a well developed Middle Palaeolithic industry (Series II) which preceded the Lower Palaeolithic (Series I) and succeeded by Late Stone Age (Series III) assemblages.

Series III of Nisar Ahmad contained non-geometric microlithic assemblages. On observation, Vidula Jayaswal,[2] on the basis of the techno-typological considerations, separates a part of the assemblage as belonging to Upper Palaeolithic phase. She further observes "the general size of the artefacts is smaller than those of Middle Palaeolithic phase of the region, but to a great extent the artefacts agree in size with 'blade and burin' industries of Chittoor District (A. P.) rather than the Late Stone Age microlithic industries".

The assemblage comprises non-geometric tools including blades, backed blades, retouched blades, burins on blade, steep scrapers, notched scrapers, side-scrapers, etc. The artefacts are made on minerals of the quartz group. Notice is drawn towards the absence of geometric microliths.

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[1] V. D. Krishnaswami : Progress in Prehistory, *AI.*, No. 9, p. 63.
[2] Vidula Jayaswal : *Palaeohistory of India*, pp. 188-89.

On conclusion, Jayaswal views that further work in this region may possibly lead to the discovery of a full fledged Upper Palaeolithic phase.

True to be so, further exploration[1] in the districts of Rewa, Satna and Sidhi conducted by the Institute of Archaeology, Allahabad University, under Prof. G.R. Sharma led to the discovery of Stone Age cultures of the Son Valley comprises Lower, Middle, Upper Mesolithic and Neolithic industries. The Upper Palaeolithic phase which was observed in 78 sites including 39 factory-sites and types of tools consist of

Scrapers
long blades
blunted and backed blades
giant lunates
points
borers on chert, jasper, etc.

Among the tools, it is observed that the blades from single major-tool type, longer than the Middle Palaeolithic blades, of thinner sections and having almost parallel sides. The shapes of the fluted cores suggest the usage of pressure technique.

RAISEN DISTRICT

Bhimbetka

The rock shelters at Bhimbetka, a group of hills on the northern fringe of the Vindhyan mountain system, lying between Obadullaganj and Barkheda Railway stations, in Raisen District, were discovered in 1957 by V. S. Wakankar[2] throwing new light on the Pre-history of this region.

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1. *IAR.*, 1975-76, pp. 25-27.
2. V.S. Wakankar : Bhimbetka—the Pre-historic Paradise, *Prachya Pratibha*, Vol. III, No. 2, pp. 7-29.

Later excavations were conducted in different rock shelters in 1972-73 onwards by Wakankar (Vikram University, Ujjain) and V.N. Mishra[1] (Deccan College, Pune).

The excavation conducted in Cave III, F. 23 by the latter[2] exposed a deposit of 4 metres with 8 layers yielding industries from Lower Palaeolithic to Mesolithic periods.

The following is the sequences of periods from bottom to top.

Layers	*Cultures*	*Chronology*
(8) to (6)	Period I : Lower Palaeolithic (Chopper-Chopping tool culture)	Before 100,000 years
	Period II (Acheulean culture)	C 100,000—40,000 years
(5)	Middle Palaeolithic	C 40,000—20,000 years
(4)	Upper Palaeolithic	C 20,000—10,000 years
(3) to (1)	Mesolithic	C 10,000—2,500 years

The Upper Palaeolithic phase of this region is stated to be not very distinctive as in it micro-blades also make their appearance and there is a feature of the high proportion of end scrapers. It is considered that this phase has been developed out of the indigenous Middle Palaeolithic culture. The characteristic feature of the industry is the increase in the proportion of blades and a pronounced tendency towards smaller and slender blades. A few burins are also found.

In the cultural sequence given by Wakankar Period IV A is described to be Upper Palaeolithic phase containing

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[1] V.N. Mishra : *Pre-historic Man and his Art in Central India*, 1977, pp. 10 ff.

[2] *Ibid.*

(1) non-geometrical microliths,
(2) fluted cores with obliquely facetted striking platforms,
(3) burins,
(4) blades,
(5) large sized lunates, and
(6) scrapers (made on chert).

He attributes the beginnings of paintings in the rock-shelters to this phase.

Recently, explorations[1] were conducted by Prof. R.V. Joshi, Dr. G. L. Badam and Shri R. P. Pandey of the Deccan College, Post-Graduate and Research Institute, Pune, on the banks and valleys of the river Mahanadi and its tributary Seonath. On the left bank of the latter, the team discovered an Upper Palaeolithic site which yielded cores, flakes, blades, burins, borers, scrapers and knives, made on chert, jasper and chalcedony.

UTTAR PRADESH

MIRZAPUR DISTRICT

Earliest notice[2] of thick and broad blades in the lowest layers in the excavations at Chopani Mando and Lekhahia was made by Cockburn (1883). Later, surface finds of such large blades were made on Amilia Kackchhaka-Nala and Khajuri-Nala of the Belan river, Lohanda Nala of the Seoti tributary and numerous sites in the Kon and the Dudh region of this district.

Explorations in 1956-57[3] by G.R. Sharma, Allahabad University, covering the tract lying between Vindhyan and Kaimur ranges north of Son led to the discovery of a number of pre-historic sites. The hanging rock of the roof of a rock shelter near Basauli was found to contain paintings depicting porcupines and human figures. Also from that shelter they recovered Upper Palaeolithic and Microlithic tools along with fossilized bones.

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[1] *IAR.*, 1977-78, p. 31.

[2] Sankalia : *PPIP.*

[3] *IAR.*, 1956-57, pp. 11-15.

At Lekhania near Rajpur, a large number of rock shelters and caves with implementiferous floor deposits and wall paintings were discovered. The tools recovered here also show the Upper Palaeolithic-cum-microlithic order.

Muhugarh[1] near Drummondganj is another important site in this district which yielded blades, bladelets, burins, borers and few flakes. Some of the backed blades are convex, recalling the Federmesser of Late Magdalenian of Northern Europe. Burins are less in number.

An interesting find is a carved bone found on the surface from the rock shelter.

Belan and its tributaries

G.R. Sharma[2] who has done much work in this region, observed a continuous geological section extending over 64 kms forming on the two banks of river Belan and further extending on the tributaries and nallas upto a distance of 44.8 kms. The section is implementiferous and fossiliferous from top to bottom.

Of the three gravels (I, II and III) found in this section, Gravel III yielded the blade and burin industry of the Upper Palaeolithic phase. The nature and composition of gravel III was described as of persistant horizons containing angular colluvium fragments of quartzite, laterite crusts and nodules and coarse grains of sand, all hardened up into a mass of lime. This formation abounds in fresh water shells which have been dated by C^{14} method to 19715 ± 340 B.P.

On the top of the cemented gravel III, occurs a deposit of buried soil of blackish colour with thinkness of 2 to 3 metres yielding Upper Palaeolithic tools as well as non-geometric microliths and this phase is viewed by G.R. Sharma as the transitional stage from Upper Palaeolithic to Mesolithic.

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[1] *IAR.*, 1975-76, pp. 43-44.

[2] G.R. Sharma : Seasonal Migrations and Mesolithic Lake cultures of the Ganga Valley, *K.C. Chattopadhyaya Memorial Volume*, pp. 120 ff.

The sequence of the Gravel III and the succeeding phase is given below.

Climate	*Formation*	*Industry*	C^{14} *date*
Slightly humid	Humus soil Formation (End of Pleistocene)	Non-Geometric Microliths and Upper Palaeolithic tools	……
Junction of Dry and humid phase	Cemented gravel III, Calcium nodules, Iron nodules, etc.	Upper Palaeolithic Blade and Burin industry	19,715 ± 340 B.P.

Vidula Jayaswal[1] and P.C. Pant (Banares Hindu University) had located several Upper Palaeolithic sites and Rock shelters during the course of their exploration in the valleys of Belan and Seoti. They also noticed Gravel III which was loose and consisted more of sand, with its lower portion rich in calcium carbonate and iron oxide yielding a number of Upper Palaeolithic tools.

Vidula Jayaswal[2] who had also studied the deposits and the collection divides the artefacts into two groups.

The first group comes from the bank deposits of river Belan and Seoti (*i.e.* above mentioned sequence of deposits given by G.R. Sharma) and the second group of artefacts collected from the factory sites on the slopes of the adjoining foot-hills.

Mundva (Chandva), a locality in one such slope, was taken for the techno-typological study of the tools and the features and types observed by her are as follows.

The artefacts of this industry are made on chert and are almost fresh. The finished tools are

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[1] *IAR.*, 1975-76, pp. 43-44.

[2] Vidula Jayaswal : *Palaeohistory of India*, pp. 186-87.

End scraper
Burin
Borer
Scraper on core
Point
Round scraper
Side scraper
Backed blade
Big lunate

Besides undetermined cores, flakes are found. Burins, mostly are made on flakes or cores and also on blades. The big lunate was compared to the Federmesser of the European Upper Palaeolithic types, Bori Beti (see below) and Shorapur Doab types. The blades are considered to be longer and thinner than the similar specimens of the other region.

Recently a rich Upper Palaeolithic settlement was discovered by Shri D.K. Bhattacharya and Shri P.K. Tewari[1] on the slopes of an easterly lying hilly range named Pachmeri, along the villages Barwadeeh and Nandeeha in Tahsil Kon. The hill range is one of the Gondwana formations, basically embeded with fine grained rocks such as chert, flint, chalcedony and jasper. Two localities were selected for collection of tools, one on the western and the other on the eastern slopes, and termed as Pachmeri I and Pachmeri II, respectively. Pachmeri I, yielded 117 pieces and of which finished tools form 20 percent. The assemblage includes

(i) retouched blades (—compared by authors with Aurignacian retouch of European Upper Palaeolithic retouches represented in the scalor-retouch at low angle and narrow and steeper retouch. The latter is also compared with blades from South eastern Gravettian industry from Olschewian, Yugoslavia),

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[1] D.K. Bhattacharya and P.K. Tewari : A Late Palaeolithic Industry from Mirzapur, *Eastern Anthropologist*, Vol. 31, No. 2, pp. 197-98 and plates.

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(ii) burins on natural fracture and bec-de-flintes, and

(iii) points made on thick flakes.

Pachmeri II : This locality yielded 878 pieces and includes varieties of finished tools. Of the total, 70 per cent is unretouched debitage of which 50 per cent are flakes and other fragments. The cores are invariably utilised as rabots. One of the interesting types among the retouched flakes is a triangular flake with a rather crudely elevated dorsal surface with steep later borders converging to give rise to a point—provisionally named as 'Proto-Limace'. Retouched blades include a variety of single and double bordered ones. In one variety, double bordered retouch is found on the dorsal surface while other type is represented an alternately retouched variety of the double border. Other retouched variety of blades are the backed blades. These are slender and steeply retouched blades with deliberately narrowed anterior ends. They are compared with Graveltian points of Euro-Asia. The end scrapers, are made on both cores and blades. Burins, borers, notches, denticulates and proto-limaces are the other tool types recorded in this collection. Burins are mainly dihedral and angle with singl below facets. Multiple burin of bec-de-flute variety is also said to be the pre-dominant type.

Thus, Pachmeri industry represents a mature nature of Upper Palaeolithic culture. However, because of the non-confirmable nature of stratigraphy, the authors have considered it to be a secondary site.

ALLAHABAD DISTRICT

Explorations by G.R. Sharma[1] and others (Allahabad University) in the Central Ganga Valley brought out a number of Lower, Middle and Upper Palaeolithic cultures. The Upper Palaeolithic implements were collected from Charki (a factory site), Leorahia (Koldihwa) on an outcrop of Ramgarh hill, Badauan Kalan, Dominha (Deoghat) and Orawa Sector II.

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[1] *IAR.*, 1973-74, p. 25.

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Of the tool types, noteworthy are the blades (retouched and blunted back), scrapers, points and burins, made on cherty material. The tools are highly patinated.

G.R. Sharma also conducted excavations at Koldihwa[1] (Deoghat) and in one of the trenches A1-A, at the depth of 6.75 m from the surface in Gravel III, Upper Palaeolithic blades and shells were recovered.

The shells found in this cemented gravel III, were dated by *PLR*[2] by C^{14} method.

The date reads as : $25,790 \pm \genfrac{}{}{0pt}{}{830}{760}$ (23, 840 B.C.).

Another excavation in the recent years conducted by the same department at Chopani-Mando[3] revealed a three fold sequence of cultural phases. Of them, Phase I is transitional in character, yielding 20 per cent of Upper Palaeolithic and 80 per cent of early Mesolithic tools. The tools of Upper Palaeo consist of parallel sided and blunted backed blades, scrapers, borers and burins, made on cherty material, besides flakes and cores.

Further explorations[1] by Prof. G.R. Sharma and others (Institute of Archaeology, University of Allahabad) have led to the discovery of Upper Palaeolithic sites at Agori Madaein, Alaur, Asnahwa-ki-Pahari near Chopan, Bhakharaur, Chitwar, Ghoria, Curdah, Khajurkhan, Khakhan, Kotta, Kurbul, Mitapur, Nevari, Patvadh, Rendia and Semia, all in Son Valley and at Khairahia and Mahalpur in Rihand valley. Tool samples collected from these sites include blades (long, retouched and blunted-backed), points, borers, scrapers, burins and crescents, besides cores and flakes, made on flinty chert, quartz, jasper and chalcedony. Among the sites mentioned above, the sites at Bhakharaur, Khairahia, Kotta, Mahalpur, Patvadh and Rijula

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1. *IAR.*, 1973-74, p. 26.
2. *Ibid.*, 1975-76, p. 84.
3. *Ibid.*, 1977-78, pp. 51-52.
4. *Ibid.*, pp. 56-57.

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are factory sites and the sites at Asnahwa-ki-Pahari and Kurhul yielded highly patinated tools.

BIHAR

SINGHBHUM DISTRICT[1]

Dr. A.K. Ghosh who had done an intensive work of exploration in this district, brought forward the stratigraphical evidence of prevailing Stone Age cultures. Here about 40 Palaeolithic sites were discovered and of them a majority of the sites lie on the rivers Subarnarekha, Koel (tributary of the Brahmani) and the tributaries of Baitarani.

In the river sections, Ghosh observed a 'Chopper-bifacie' (Abbevillian-Acheulian) industry in the Lower gravel conglomerate, the flake industry (Scrapers and borers) found on the junction of the detrital laterite and the 'flake blade' found in the upper clay, and 'microliths' on the surface. The Upper Palaeolithic 'flake-blade' industry found *in situ* in the 'upper clay' in a number of sites which were grouped area-wise.

Sites	*Group*
Dumdumi Domgara Sirka and Saldih (on Kapila ghat) Bamni and Kankijhor	Chandil (On Subarnarekha)
Tumangdungri Gopalpur	Ghatsila (on Subarnarekha)
Ukri Dugni Barudih and Kendua	Sini (in the Sanjay Valley)

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1. Sankalia : *PPIP.*, pp. 222-24.

Sites	*Groups*
Nuia	
Gua—1	Jamda or Gua
Gua—2 and	(On the Karo, a
Thakura	tributary of Koel)

The 'Flake-blade' industry comprises tools made on jasper, agate and various other similar minerals. This industry forms only 20.48% of the total Palaeolithic collection.

The types of tools collected from the above mentioned areas and their percentage are as follows :

Types	*Percentage*
Choppers (small)	11.91
Scrapers (side, end and steep)	53.32
Points	11.91
Blades	9.05
Knives	1.91
Borers	1.43
Burins	0.95
Cores	9.52

Thus, it is evident from the above assemblage, that the industry is dominated by scrapers (53.32%) and then followed by choppers, points and blades.

Scrapers made on cores, flakes and blades include side, hollow-end, nose and end-scrapers while points were made on flakes as well as on blades. Of the blades, some are retouched and few are backed. Knives are also made on blades with one example of edge blunt and the other is retouched, sharp and straight. Borers and burins are made on both blades and flakes.

Thus it is stated that numerically and typologically the Singhbhum industry cannot be regarded as a full fledged 'blade and burin' industry as the proportion of the blades and burins are lower in this region.

TAMILNADU

MADURAI DISTRICT

Exploration during 1960-61[1] in this district was conducted by K.V. Raman in the valleys of Marattar and Vaigai in Tirumangalam and Periakulam taluks. On the left bank of the Marattar river near T. Padupatti, an extensive site yielded tools which are considered to be belonging to the advanced stage of Series II (Middle Palaeolithic).

These tools may be brought under the Upper Palaeolithic phase on the basis of techno-typology.

The raw materials used are fine grained stones like jasper, chalcedony, etc. The tools comprise

flake-scrapers,
tanged points,
lunates,
a specimen of double shouldered arrow-head,
fluted-cores

The technique involved in the manufacture of these tools can be stated as advanced levalloisian, as many of the tools show prepared platforms.

BORI BETI ASSEMBLAGE

Vidula Jayaswal[2] has included this industry (Bori Beti) which was found available in the Safderjung Museum without the identity of the findspot, in the chapter of 'Upper Palaeolithic cultures'.

Since the tools are important techno-typologically, she has divided the finished tools after examination, into following types. (See Pl. XV).

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1. *IAR.*, 1960-61, p. 18.
2. Vidula Jayaswal : *Palaeohistory of India*, pp. 189-90

Side Scraper	...	...	50
Chopping tool	...	...	5
Small chopper	...	...	4
End scraper	...	...	6
Round scraper	...	...	2
Burin	...	...	4
Point	...	...	30
Backed blade	...	...	16
Big Lunate	...	...	12
		Total :	129

The big lunates which are made on thick flakes having one thoroughly worked convex side at a high angle have already been compared to those of Shorapur Doab and Belan.

Flakes and blades predominate the industry. While the former represent levallois flakes and points, the latter are converted into finished tools. The mean length and breadth of the blades are stated to be 48.5 and 20.0 mm respectively.

CHAPTER III

General Observation and Chronology

After a study of these deposits, sites and collection, Sankalia[1] conveniently divided the Upper Palaeolithic assemblages into two groups as follows :

(A) *Classical Blade and Burin Industry of the European Type* : In this group the blades and burins are long, slender but robust and fully retouched or blunted as in the classical gravette point and the burins are equally large and cover many of the types known in the classical European industries. But they do not conform with the whole phase.

Because, in the Upper Palaeolithic of Europe as many as 92 tool-types are recognized and among them scrapers play important part. And above all, a rich art and human remains which are definitely known to be of *Homo-Sapiens* who were responsible for the creation of rich art, were evidenced.

(B) *Sub-classical Blade and Burin Industry* : In this group the blades and the burins are not invariably fine, and are not of the true European type.

The industries which come under the Classical Blade and Burin Industry of European type (A) are

(1) Renigunta

(2) Yerragondapalem

(3) Patne

The other industries are grouped under (B) Sub-classical (See Pl. II for classical and sub-classical sites).

Though the difference in the above two groups is pointed out, Sankalia concludes that both these blade-and burin industries stratigraphically fall within the Pleistocene, succeed the Middle Stone Age or Middle Palaeolithic in which blades and burins are few or absent, and are followed, almost all over Peninsular India, by microliths.

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[1] Sankalia : *PPIP.*, p. 230.

Vidula Jayaswal's Classification[1] of the industries into two broad groups is based on the length-breadth proportion of blades. For this, she had selected assemblages coming from Vedullacheruvu (Chittoor District), Shorapur Doab, Kurnool District, Belan basin, Upper Son basin, for study of size and proportion of blades.

The selection of the blades for this type of analysis is due to general preference of blades in the industries as well as implements made on blades dominate in all. The percentage of burins fluctuates in all the industries and compared to the European Upper Palaeolithic industries, these are not found to be in good proportion.

Taking the above mentioned 5 sites, the ratio between the length and breadth mean in each industry has been calculated and similarly of the proportion between length and thickness average.

Industries	*Length : Breadth*	*Length : Thickness*
Vedullacheruvu	2.2 : 1	4.6 : 1
Kurnool	2.1 : 1	3.8 : 1
Shorapur Doab	2.5 : 1	4.1 : 1
Upper Son	2.5 : 1	7.2 : 1
Belan	2.6 : 1	4.7 : 1

As indicated above, the two broad groups of the industries are divided on the basis of length and breadth proportion of blades. The first group brings together the industries with blades which are less than 2.5 times longer than the breadth and, in the second group, the length-breadth ratio is 2.5 : 1 and more.

Group I	*Group II*
Vedullacheruvu Kurnool	Shorapur Doab Upper Son and Belan

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[1] Vidula Jayaswal : *Palaeohistory of India*, pp. 188-93.

According to the above ratio calculation, Kurnool specimens proved to be the longest and broadest in proportion to their breadth. They were also found to be the crudest in technology on comparison in length-thickness ratio—3.8 : 1.

The specimens of Upper Son show that they are very thin in proportion to their length (7.2 : 1).

Thus, on surmising the ratio position of the industries Vidula Jayaswal opines, 'in respect of blade technology, the Upper Son and Belan are the most evolved industries, while the one from Kurnool proved itself to be the crudest'.

The classification made by Sankalia is more or less based upon the European analogy, while Vidula Jayaswal's division into two groups relies on the proportion and size of the tools. Now, that the presence of the Upper Palaeolithic has been realised by scholars, it is time to focus the evolutional aspects of this phase through its different stages.

In Western Europe under a similar circumstance the idea of evolution of Upper Palaeolithic was accepted and followed by a scheme laid by Abbe. H. Breuil. The scheme divided the phase into Aurignacian—Early, Middle and Upper with Early Aurignacian characterized by chatelperron knives, Middle with cleft-base bone points and upper with La Gravette points. This idea of evolution with the scheme was followed upto 1930 and later further ramification took place with the advent of new discoveries and interpretations by scholars.

Likewise, though not on similar grounds, the evolutional background can be focussed in the Indian context through a general observation of the nature of elements which predominate the industries and of other aspects.

Bearing on such observation, it is proposed by the present author, to have a tentative scheme of dividing the Upper Palaeolithic into 3 phases *viz.*,

(A) Early Upper Palaeolithic

(B) Middle Upper Palaeolithic

(C) Late Upper Palaeolithic

(i) First half
(ii) Second half

depending on three considerations *viz.*, (1) Stratigraphical; (2) typological; and (3) chronological.

Stratigraphical consideration

Two sites are to be referred to here *viz.*, (1) Belan basin and (2) Patne.

Belan basin

The geological section forming on the banks of river Belan and further extending over the tributaries has already been described as consisting of 3 gravels. Gravel III, cemented with calcium nodules, iron nodules etc. yielded Upper Palaeolithic Blade and Burin industry. The cemented gravel III also bears a C^{14} date.

The successive layer (above cemented Gravel III) which is of humus soil formation yields non-geometric microliths and Upper Palaeolithic tools, thus forming a second stage in the evolution. G.R. Sharma, the investigator calls this latter phase as 'transitionai stage' from Upper Palaeolithic to Mesolithic. Hence the Belan section stratigraphically establishes a part of the evolution *i.e.* the Middle and Late phases of Upper Palaeolithic.

Patne

Sali's excavation at Patne exposed a 10 metre thick fluvial deposit with 13 layers, all except 3 being implementiferous. The stratigraphy revealed a *successive cultural sequence* from Middle Palaeolithic (Patne I) to Mesolithic (Patne III) through a full fledged Upper Palaeolithic (Patne II—A, B, C and D). Patne II A, which just succeeds Patne I *i.e.* Middle Palaeolithic, represents a formative stage with a slight increase in the blade element and sudden decrease in proportion of scrapers and flakes. Patne II D, preceding the Mesolithic period (Patne III) bears a mixture of a small proportion of microlithic elements

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of geometric forms such as triangles and trapezes besides lunates, thus representing a transitional stage from Upper Palaeolithic to Microlithic (Mesolithic). In between the above mentioned sub phases, Patne II B and C form the intervening stage or a full fledged phase of the Upper Palaeolithic.

In Sankalia's words 'at Patne we have an excellent evidence for the evolution of Microlithic industry from an earlier Middle Palaeolithic through Upper Palaeolithic'. In other words, it also means that the Upper Palaeolithic phase underwent a complete evolutional process, cohesively. The three stages of Patne II suggested above may tentatively be set as a standard in viewing the three phases of Upper Palaeolithic in India.

Typological Considerations

The industries can be divided under the three phases of Upper Palaeolithic on the basis of a general observation of the nature of assemblages and tool-types.

(A) *Early Upper Palaeolithic* phase can be considered under the following provise

(i) when the assemblage is mixed with the Middle Palaeolithic tools *viz.*, scrapers, borers, points and other flake tools but less in percentage.

(ii) when the assemblage though dominated by the blade and burin industry, lacks in refinement by retaining its technical antecedents (*i.e.* of Middle Palaeolithic).

(B) *Middle Upper Palaeolithic phase* : The phase is considered with characters of

(i) a full fledged or fully developed blade burin industry though technologically such development may vary from place to place and

(ii) blades and burins dominate over other types of tools in number.

(C) *Late Upper Palaeolithic phase* : This can be divided into two halves of sub phases

(i) In the first half, industry is very much akin to Middle Upper Palaeolithic phase, dominated by blades and burins. But, side by side .along with other types of tools they show definite signs of diminutive tendency.

(ii) In the second half, the industry though dominated by blades and burins, is mixed up in a lesser percentage with non-geometric microliths and later with geometric-microliths also.

Chronological consideration

It is observed by Sankalia that Upper Palaeolithic has two fold connotations. The first and the most important, the object whether it be bone, stone or wood, must fall within the Palaeolithic period and secondly, since the divisions of Pleistocene, Lower, Middle and Upper are equated with the Palaeolithic period, the *last phase* i.e., Upper *Pleistocene* was assigned to Upper Palaeolithic.

The Upper Pleistocene roughly comes in the bracket of 30,000 to 10,000 B.P. The C^{14} dates of some of the Upper Palaeolithic sites in Europe, Western Asia and Africa fall within this range.

In India too, the same chronological bracket holds good as it is corroborated by evidences coming from Stratigraphy and geological strata. The evidence from Kurnool caves where the bone implements and blades occur in association with Late Pleistocene fauna, indicates Late Pleistocene age relatively connected to Upper Palaeolithic phase.

Sankalia further adds that the middle gravels containing Middle Palaeolithic tools in Maharashtra and the extrapolation elsewhere could be dated to a period before 30,000 or 37,000 B.P.

In addition to the above chronological background, we have two C^{14} dates for the Upper Palaeolithic industry found in the Belan basin (U.P.). The cemented Gravel III associated with Blade and Burin industry is dated to

19,715 ± 340 B.P.

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Again the shells found in the cemented Gravel III, of Locality VI, near Deoghat are dated to

$$25{,}790 \ {}^{+\,830}_{-\,760} \quad (23{,}840 \text{ B.C.})$$

These two dates are important because not only they bear evidence for a full fledged or developed blade and burin industry but also they firmly fix the industries in the above mentioned chronological bracket, thus drawing near the Indian Upper Palaeolithic phase chronologically to the European and Asian cultures.

Evalutional positions of Upper Palaeolithic industries in Chronological background

ANDHRA PRADESH

Giddalur II : This industry has been assigned to the Early Upper Palaeolithic phase for it includes a majority of clactonian flakes, bladish flakes and coarse burinate tools showing a formative stage.

Soundara Rajan has drawn the attention to the Aurignacian characteristics of a double end scraper with nibble retouch and of an end scraper made out of a tongue shaped flake.

Kurnool Caves : At Muchchatla Chintamanu Gavi the faunal remains revealed by the excavation besides lithic and bone tools, are already stated to have been placed in the Late Pleistocene. The industry though dominates in Blades, Flakes occupy the second place instead of burins or other blade-tools. Moreover, the bone-tools which were compared to those of Aurignacian, are not refined.

Hence this industry may be placed in the Early Upper Palaeolithic phase. This view is strengthened by Vidula Jayaswal's conclusion that Kurnool blades are the crudest and oldest compared to their counterparts in other industries in size and proportion. (See above).

Nagarjunakonda : This industry can be assigned to the Middle Upper Palaeolithic phase as the blade, blade-tools and

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burins are found in large variety. In Soundara Rajan's words, 'this industry particularly show, on one hand, a persistant blade and burin element and, on the other, a further ramification into diminishing sizes of delicately touched scrapers and points......'.

Renigunta : The Rallakalava industry has been described by Sankalia as the Classical type having parallel in Europe. M.L.K. Murthy points out that typologically the blades and burins are in no way different from those found in Upper Palaeolithic caves and rock shelters of Western and Eastern Europe. The burins are most akin to those that occur in Aurignacian and Magdalenian, Kostienki (USSR), Upper Aurignacian (Germany), etc.

Undoubtedly, the industry is fully developed having a rich variety of blades and burins but on the typological consideration, since the elements of diminutive shapes of Points, lunates, triangles, trapezes, etc. are present, it may be assigned to the beginning of the first half of the Late Upper Palaeolithic phase. Some of the above mentioned European industries also fall within this range of period.

Vemula : In the opinion of Sankalia, this industry at Vemula, morphologically shows a tendency towards blade element and should be assigned to the (initial stage of) Upper Palaeolithic.

Truly so, on typological consideration, as the tool-types contain mainly flakes, blade-flakes and blades, this industry may be placed in the Early Upper Palaeolithic phase.

Yerragondapalem : This industry is typologically and morphologically compared by Thimma Reddy to that of Renigunta.

Though the blade and burin industry is well developed, here again the diminutive shapes of tools—triangles, trapezoids, etc. make their appearance. So like Renigunta, this industry may be assigned to the beginning of Late Upper Palaeolithic phase.

KARNATAKA

Sanganakallu : Here, with the patinated levalloisian flakes a crude microlithic industry was found. Observing the latter crude microliths, Seshadri called it as a post palaeolithic industry which would be no more than 'a macro facies' of the microlithic blades.

Since this industry is almost evidently on the transitional stage, it may be reckoned with the ending stage *viz.* the second half of the Late Upper Palaeolithic phase.

Shorapur Doab : Paddayya, the investigator, compares the blade and burin industry closely with the industry of Rallakalava (A.P.) on the grounds of the predominence of blades and their size, but at the same time admits that there are certain differences in the sphere of typology and technology which prove that the latter industry (Rallakalava) is more refined than the former one.

Sankalia too, feels that typologically this industry should be regarded as slightly earlier than the true blade and burin industry of Renigunta and Yerragondapalem.

Thus, Shorapur Doab can conveniently be placed in the Middle Upper Palaeolithic phase along with Belan and Upper Son industries, the blades of which almost show similar ratio in their mean length and breadth.

MAHARASHTRA

Kandivili and Borivili : K.R.U. Todd believes that the blade and burin industry with types such as polyhedral, angle burins and parrot-beaked types found at Kandivili belong to 'a more evolved class of blade and burin industry'. He also compared them to Aurignacian types of Europe and Middle East. The parrot-beaked types of points are also found at Shorapur Doab.

At Borivili, Malik observes the presence of 'a flake-blade-scraper' industry with varieties of scrapers. Burins are absent.

On typological considerations, the industry at Kandivili may be placed in par with Shorapur Doab *i.e.* Middle Upper Palaeolithic phase, while the Borivili industry may have to be assigned to the Early Upper Palaeolithic phase.

Nevasa : The industry here comprises small flakes, cores, blades, scrapers, burins, points and levallois flakes.

The blade and burins were thick and long. On typological considerations, like other industries which bear similar elements, this can be reckoned with the Early Upper Palaeolithic phase.

Patne

Patne II A : This sub-phase has been already assigned to the formative stage *i.e.* the Early Upper Palaeolithic phase on the basis of stratigraphy and tool types. (See above).

Patne II B : This sub-phase witnesses an increase in the blades, blade-tools and flake-tools which are thick, broad and long.

Blade-tool types are scrapers, burins and borers. Thus, by showing the domination of blade element, the industry can conveniently come under the Middle Upper Palaeolithic phase.

Patne II C : The two changes take place in this sub-phase. Compared to the preceding phase, the blades and blade tools become diminutive in size and there is a sudden change in the chief raw material from jasper to chalcedony.

And hence, this industry may be assigned to the beginning of the First half of the Late Upper Palaeolithic phase.

Patne II D : This sub-phase also is already assigned to the Late Upper Palaeolithic phase (See above) on stratigraphic grounds. On typological considerations, since the industry is mixed with a small proportion of geometric forms, it may be placed in the second half of the Late Upper Palaeolithic phase.

GUJARAT

Visadi : The industry contains flakes, blades and cores which are thick and massive and burins made on tabular pieces of quartz.

Sankalia views that since the collection is not fully representational, it falls below the classical group. (Mrs.) Bridget Allchin and Andrew Goudie are of the opinion that the industry may be placed somewhere between 40,000 and 12,000 B.P.

On comparing other industries (cited above), this industry is devoid of tool types such as scrapers, borers and other flake tools and hence it may be assigned tentatively to the Middle Upper Palaeolithic phase.

RAJASTHAN

Budha Pushkar : The schemetic stratigraphical sequence shows continuous phase of arid climate in which both Middle and Upper Palaeolithic successively flourished. The latter industry can on typological considerations also be placed in the Early Upper Palaeolithic phase as the elements of other tool types flakes, scrapers and cleavers exist besides the main assemblage of blades and burins.

MADHYA PRADESH

Upper Son : The blades in this industry form a single major tool-type, being longer, thinner in section and having almost parallel sides. Though absence of burins are noticed, the industry on typological ground can be assigned to the fully developed sub-phase *i.e.* Middle Upper Palaeolithic phase. Also, the industry thus falls along with Shorapur Doab and Belan industries on the basis of the mean length and breadth ratio.

Bhimbetka : The Upper Palaeolithic industry found on the excavation conducted by V.N. Mishra in cave III F. 23, is stated to be not distinctive as in it micro-blades also make their appearance and there is a high proportion of end-scrapers.

On the other hand, Wakankar's excavation in another Rock shelter reveals Upper Palaeolithic phase with tools-blades, burins, big lunates and occasionally scrapers.

Both have approximately placed the Upper Palaeolithic phase between C. 20,000 to 10,000 B.P.

On typological considerations, noticing the presence of micro-blades, the industry may be placed in the second half of the Late Upper Palaeolithic phase.

UTTAR PRADESH

Belan : The cemented gravel III, as already seen, bears the C^{11} date and comes under naturally Middle Upper Palaeolithic phase.

The successive deposit which also belongs to the Upper Palaeolithic phase with blades and burins found associated with microliths may be assigned to the Late Upper Palaeolithic phase.

In another excavation at Locality VI (near Deoghat) on Belan river, the Upper Palaeolithic tools were found in the cemented gravel III which also bear C^{14} date (See above).

BIHAR

Singhbhum : The Upper Palaeolithic industry is evidently dominated by scrapers which forms 53.32 per cent of the finished forms. The investigator calls the industry as 'flake-blade' industry which shows the predominence of flakes.

Thus, since this industry cannot be regarded, numerically or typologically, as a full-fledged blade and burin industry, it may safely be assigned to the Early Upper Palaeolithic phase.

CHAPTER IV

Pattern of Life and Art

It has been already stated, that apart from the industry tools of stone and bones, we do not have any fossil evidence or any other evidence with which we can reconstruct the life of Upper Palaeolithic man who has been called as 'Homo-Sapien' in Europe.

It is said that Upper Palaeolithic man certainly lived more securely than his sub-human predecessors, mainly because of his improved industrial capacity. His dependence more upon blades and burins show that he had predesigned ideas of making tools with other accessories like wood, bone or antler. At Muchchatla Chintamanu Gavi (Kurnool) the bone implements, though were crude, they show their functionary aspects with the varieties of working edges.

The raw-materials utilised by him for his tools are also of great significance. He worked more on fine grained quartzite and materials like chert, chalcedony, jasper, agate, etc. to produce wider range of objects which become handy during his migrational or hunting expeditions. He had developed the techniques of steep secondary flaking, trimming, blunting of the back and other advanced methods of shaping his tools or tips of the tools according to his needs.

Particularly, burins with chisel edges and other varieties, were the implements which might have been used as instruments for wood working, carving or in the manufacture of wooden, bone or other accessories needed for the day to day life.

His dependence on blades and burins are proved in the industry on Rallakalava (Renigunta) where the assemblage is dominated with blades and burins which he might have used for hunting and collecting roots and fruits.

The sites and the industries do not yield evidence of any permanent habitation of the Upper Palaeolithic man. It is possible, like the Upper Palaeolithic man in Europe, he was seasonally nomadic, following his chosen game on their migrations. It is proved by excavations at Muchchatla Chintamanu Gavi (Kurnool). The absence of occupational floors, charcoal or ashes and accumulation of food refuse show that the cave was neither a kill site nor a permanent settlement but a site frequented by the pre-historic man. This also explains the occurrence of concentrated sites of Upper Palaeolithic phases in different regions with different stages.

Further evidences regarding his dwellings in the rock shelters come from Lekhania, Muhugarh, Mirzapur District, U.P. and Bhimbetka, M.P.

In the field of art there are few evidences coming forth. At Billa Surgam along with bone implements, Robert Bruce Foote had reported the find of a solitary bone bead. At Patne subphase II-C, Sali has discovered a disc bead made on fragment of an Ostrich egg-shell. This is the first and the earliest man made ornamental object on an Ostrich egg-shell, discovered in India. It is to be noted that Ostrichs exist now-a-days in Africa and Arabia but not in India. The use of shells or the evidence of shells come even from the Belan basin in the cemented gravel III. They were used as samples for C^{14} dating.

Some of the rock paintings at Bhimbetka were attributed to the Upper Palaeolithic phase by V.S. Wakankar. While excavating Bhimbetka cave II B. 33, several red stone pieces mostly haematite were obtained from different levels and all of them had rubbing marks because of their use for making colours. Similar pieces including haemetite, manganese, yellow ochre and *terra-verta* (green) were obtained in cave III A. 28. But this *terra-verta* which was also found in Upper Palaeolithic levels is of great significance and Wakankar attributes certain paintings made on this material to Upper Palaeolithic phase.

Chronologically, the Bhimbetka industry is placed in the closing stages of Late Upper Palaeolithic phase and stands on reasons for the beginning of paintings in Bhimbetka region which successively continued in Mesolithic and Chaleolithic periods. (See Pls. XVIII-XIX).

Rock paintings are also reported to be found at Basauli (Mirzapur District), in the hanging rock cave and Rock shelters at Lekhania and Muhugarh in Mirzapur District. It is interesting to note that in a site at Pratapgarh, one mother goddess figure carved on bone has been recovered in the excavation in the Upper Palaeolithic levels.

Thus, so far, in the field of art, only glimpses of evidences are coming forth.

CHAPTER V

Conclusion

The subject 'Upper Palaeolithic' has recently entered the arena of the Studies in the Indian Pre-history. With the recent discoveries of sites in different States, the subject is bound to expand.

Scholars who had once believed that there is no separate phase of Upper Palaeolithic in India, have revised their views with the new discoveries of sites yielding corroborative, stratigraphical and chronological evidences. There are yet, some of the scholars who are still not satisfied with evidences prevailing in the Indian context. The time has come to rethink. The diffident outlook by scholars may impede the expansion in the study of this subject which has just blossomed and as a whole may stint the growth of Pre-historic studies in India.

Call for re-examination of already excavated and explored sites

With the changed outlook towards the study of Upper Palaeolithic phase in India, there has come a need for re-examination of the explored and excavated sites of the Middle Palaeolithic and Mesolithic periods, particularly of the closing phase of the former and the initial phase of the latter. An example of such re-examination has already been set by Vidula Jayaswal in her attempt in separating the blade and burin industry from Late Stone Age industries of Upper Son (M.P.) noticed by Nisar Ahmed.

Excavation and study of the sites which are recently discovered

Recent explorations have brought to light a number of sites bearing Upper Palaeolithic industries, situated in the Central Godavari basin (Maharashtra), in region around

Vishakapatnam (A.P.), in the valleys of Adva and Gurma in Rewa District (M.P.), in region north of Hanumana on Kaimur Range, Allahabad District (U.P.) and in the Mirzapur District (U.P.).

Excavations and further study of these sites may certainly expand the study of Upper Palaeolithic period in India in the similar Pattern of Europe and West Asia.

New Explorations

States like Assam, Kerala, West Bengal, Panjab, Kashmir and Himachal Pradesh have not figured in the study of this phase. It may be observed that so far, the Upper Palaeolithic phase has been found in most of the sites, intervening the two Middle and Later Stone Age phases or separately along with either of the two phases, thus indicating, its evolutional position and chances of its discovery along with the Middle and Mesolithic sites around.

APPENDIX

A Short list of terms

Aeolian deposits : Wind-blow deposits characteristic of relatively dry periods *e.g.* inter pluvials or glacials with low precipitation.

Backed Blade : Those blades which have blunting on one of their margins have been grouped under this class.

Blade with Marginal Retouch : The group consists of two types *i.e.*, blades with one or both retouched margins. The retouching on these specimens is done at angle of less than 75°.

Blade tools : Tool made from a single thin narrow flake detached from a core. Controlled flaking technique characteristic of the Upper Palaeolithic but also known from earlier cultures.

Burin : This is a special type of implement made on blanks, occasionally on cores. In general 'it exhibits a relatively narrow cutting edge' normally mounted at right angles or nearly so, to the ventral plane (or the bulbar face) of the blank on which the piece is made.

Burins are classified on the basis of edging and its direction and in the spalled, scaled and fluted orders.

Spall : Removal, probably by percussion, of a small silver or narrow strip of flint, which may be called a spall, from each of the two opposite margins at the end of the piece.

Spallettes : Removal, probably by pressure very carefully exerted, of diminutive narrow spalls, which may be called *spallettes*, in series of two or more.

Scales : Removal from one margin at end of piece, across its depth or thickness, probably by pressure, of a series of small, thin disc-like chips, which may be called scales.

Classification is done on the basis of the 'method of Edging and its Direction' and in the spalled, scaled and fluted orders.

Standard types

Central : Oblique spall opposed to oblique spall.
Bevel : Vertical spall opposed to oblique spall.
Rectangular : Transverse spall opposed to vertical spall.
Convex : Convex spall opposed to vertical spall.
Concave : Concave spall opposed to vertical spall.
Nucleiform : Vertical spalls from margin and face (horizontal platform).

Bevel-scaled : Oblique line of scales opposed to vertical spall.
Side-scaled : Vertical line of scales opposed to oblique spall.
Rectangular-scaled : Transverse line of scales opposed to vertical spall.
Convex-scaled : Convex line of scales opposed to vertical spall.
Concave-scaled : Concave line of sacles opposed to vertical spall.
Rostrate-scaled : Vertical line of scales opposed to convex spall.
Parrot-beak : Convex line of scales opposed to inward spall.
Counter-scaled : Scale opposed to scale.
Carinate : Spallettes opposed to vertical platform of spall.

SELECT BIBLIOGRAPHY

Indian Archaeology—A Review (*IAR.*,) Years : 1955-56, 1956-57, 1960-61, 1973-74, 1975-76, 1976-77 and 1977-78.

BOOKS

Allchin, B. and F.R. : The Birth of Indian Civilization.
Bordes, F. : The Old Stone Age, London (1968).
Foote, R.B. : Prehistoric and Proto-historic Antiquities of India.
Sankalia, H.D. : The Prehistory and Protohistory of India and Pakistan (*PPIP*).
Vidula Jayaswal : Palaeohistory of India

ARTICLES

Allchin Bridget and Goudie Andrew : Pushkar : Pre-history and climatic change in Western India, *World Archaeology*, Vol. 5, No. 3, Feb. 1974, pp. 358-68.

Dunes aridity and early man in Gujarat, Western India, *Man*, Vol. 6, 1971, pp. 248-65.

Bhattacharya, D.K. and Tewari, P.K. : A Late Palaeolithic Industry from Mirzapur, *Eastern Anthropologist*, Vol. 31, No. 2, pp. 197-98 and figures.

Commiade, L.A. and Burkitt, H.C. : Fresh light on the Stone Ages in South East India, *Antiquity*, Vol. IV, 1930, pp. 327 ff.

Ghosh, A.K. : The Palaeolithic Cultures of Singhbhum, *Transactions of the American Philosophical Society*, New Series, Vol. 60, Part I, 1970.

Krishnaswami, V.D. : Progress in Prehistory, *Ancient India*, (*AI.*), No. 9.

Mishra, V.N. : Pre-historic culture sequence of Bhimbetka, *Pre-historic Man and his Art in Central India*, 1977, p. 10 ff.

Murthy, M.L.K. : Blade-and-Burin and Late Stone Age Industries around Renigunta, Chittoor District, *Indian Antiquary*, Vol. IV, pp. 106-28.

A Late Pleistocene Cave site in Southern India, *Proceedings of the American Philosophical Soceity*, Vol. 118, No. 2, 1974, pp. 196-230.

Noone, H.V.V. : A Classification of Flint Burins or Gravers, *The Journal of the Royal Anthropological Institute of Great Britain and Ireland*, Vol. LXIV.

Paddayya, K. : The Blade-Tool Industry of Shorapur Doab, *Indian Antiquary*, Vol. IV, pp. 165-90.

Sali, S.A. : Quaternary Stratigraphy in the Kan-Basin, *JASB.*, Vol. 39, pp. 157-67.

Soundara Rajan, K.V. : Stone Age Industries near Giddalur, District Kurnool, *Ancient India*, 1950, No. 8, pp. 64-92.

Thimma Reddy, K. : Vemula Industry in the Cuddapah Basin, *Indian Antiquary*, Vol. IV, pp. 227-34.

Todd, K.R.U. : The microlithic industries of Bombay, *Ancient India*, No. 6.

Wakankar, V.S. : Bhimbetka—the pre-historic Paradise, *Prachya Pratibha*, Vol. III, No. 2, pp. 7-29.

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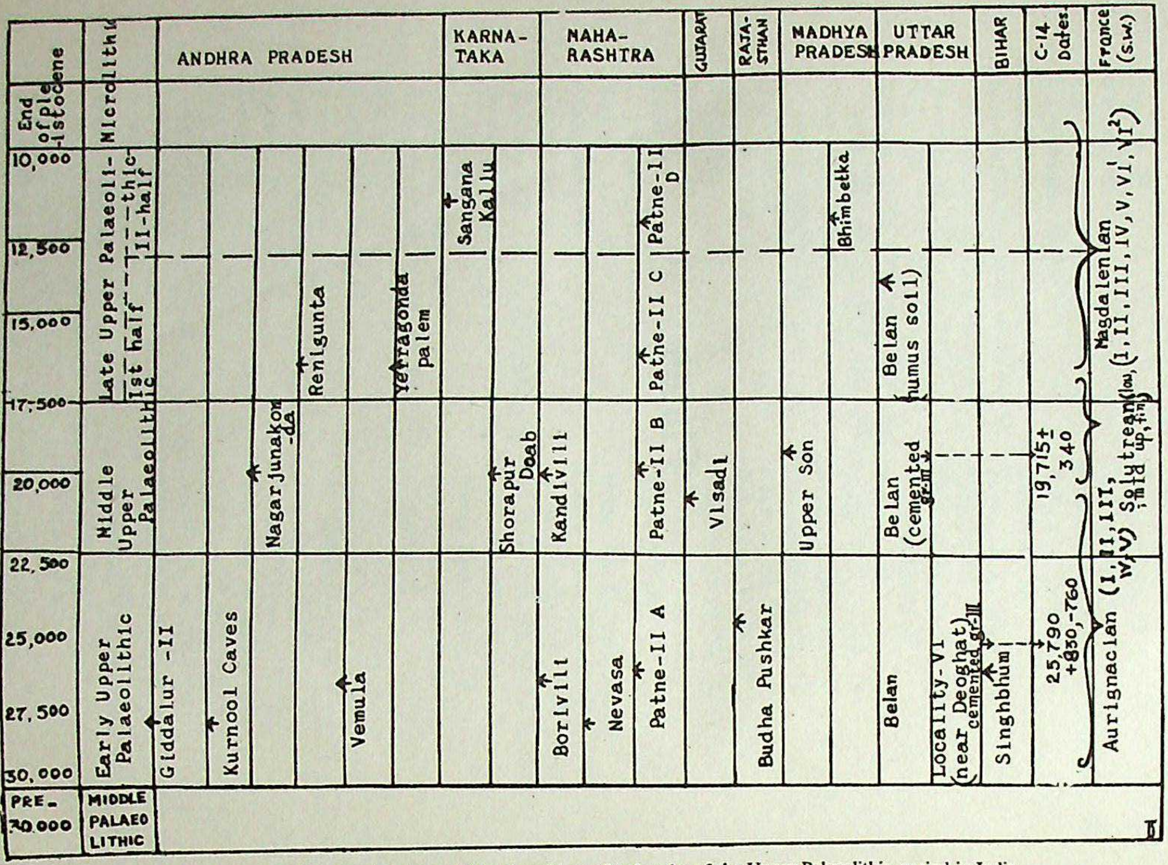
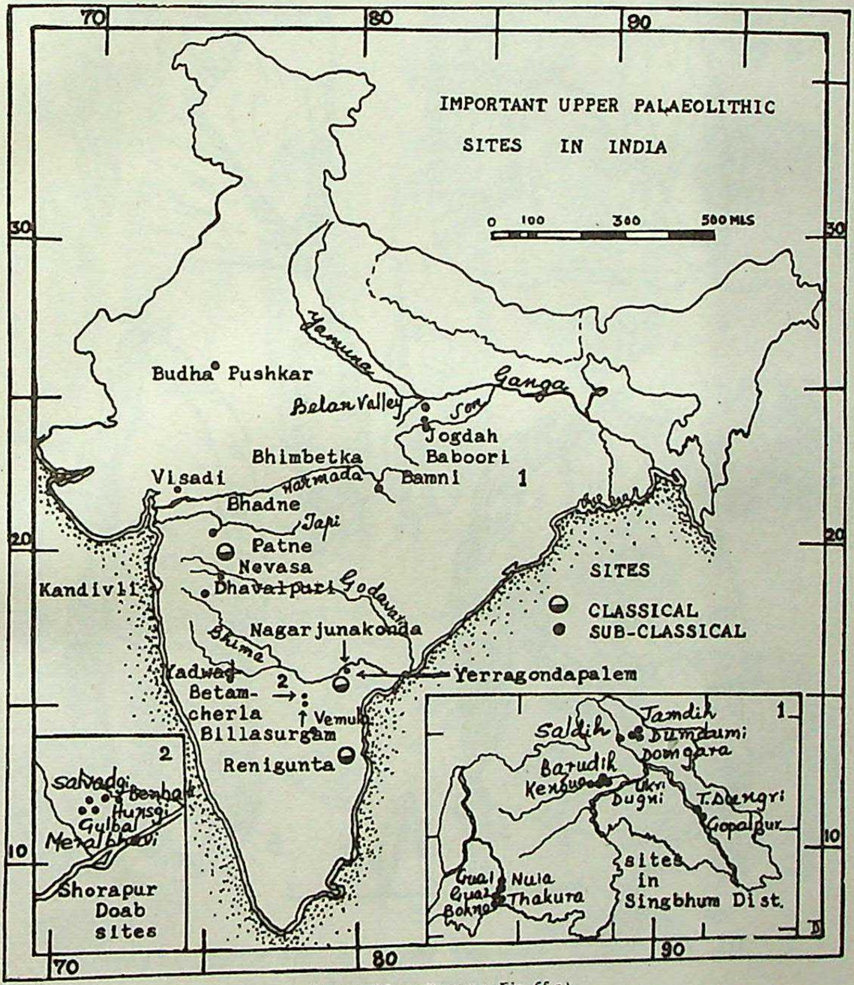

End of ple-istocene
Microlithic
ANDHRA PRADESH
KARNA-TAKA
MAHA-RASHTRA
GUJARAT
RAJA-STHAN
MADHYA PRADESH
UTTAR PRADESH
BIHAR
C-14 Dates.
France (S.W.)
10,000
12,500
15,000
17,500
20,000
22,500
25,000
27,500
30,000
PRE-30,000
Late Upper Palaeoli-thic
Ist half
II-half
Middle Upper Palaeolithic
Early Upper Palaeolithic
MIDDLE PALAEO LITHIC
Giddalur -II
Kurnool Caves
Nagarjunakon-da
Renigunta
Vemula
Yerragonda palem
Sangana Kallu
Shorapur Doab
Kandivili
Borivili
Nevasa
Patne-II A
Patne-II B
Patne-II C
Patne-II D
Visadi
Budha Pushkar
Upper Son
Bhimbetka
Belan
Belan (cemented gr-III)
Belan (humus soil)
Locality-VI (near Deoghat) cemented gr-III
Singhbhum
25,790 +830,-760
19,715± 340
Aurignacian (I, II, III, IV, V)
Solutrean (low, mid, up, fin)
Magdalenian (I, II, III, IV, V, VI¹, VI²)
II

I. Chronological Table indicating the evolutional positions of industries of the Upper Palaeolithic period in India.


IMPORTANT UPPER PALAEOLITHIC SITES IN INDIA
0
100
300
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90
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20
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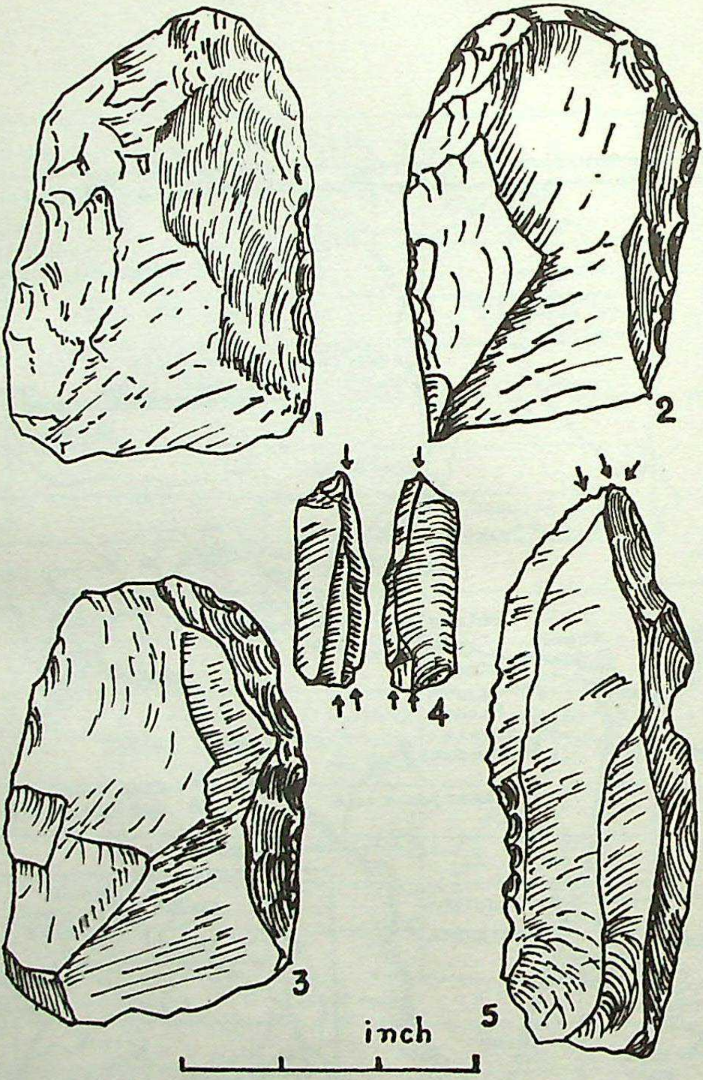
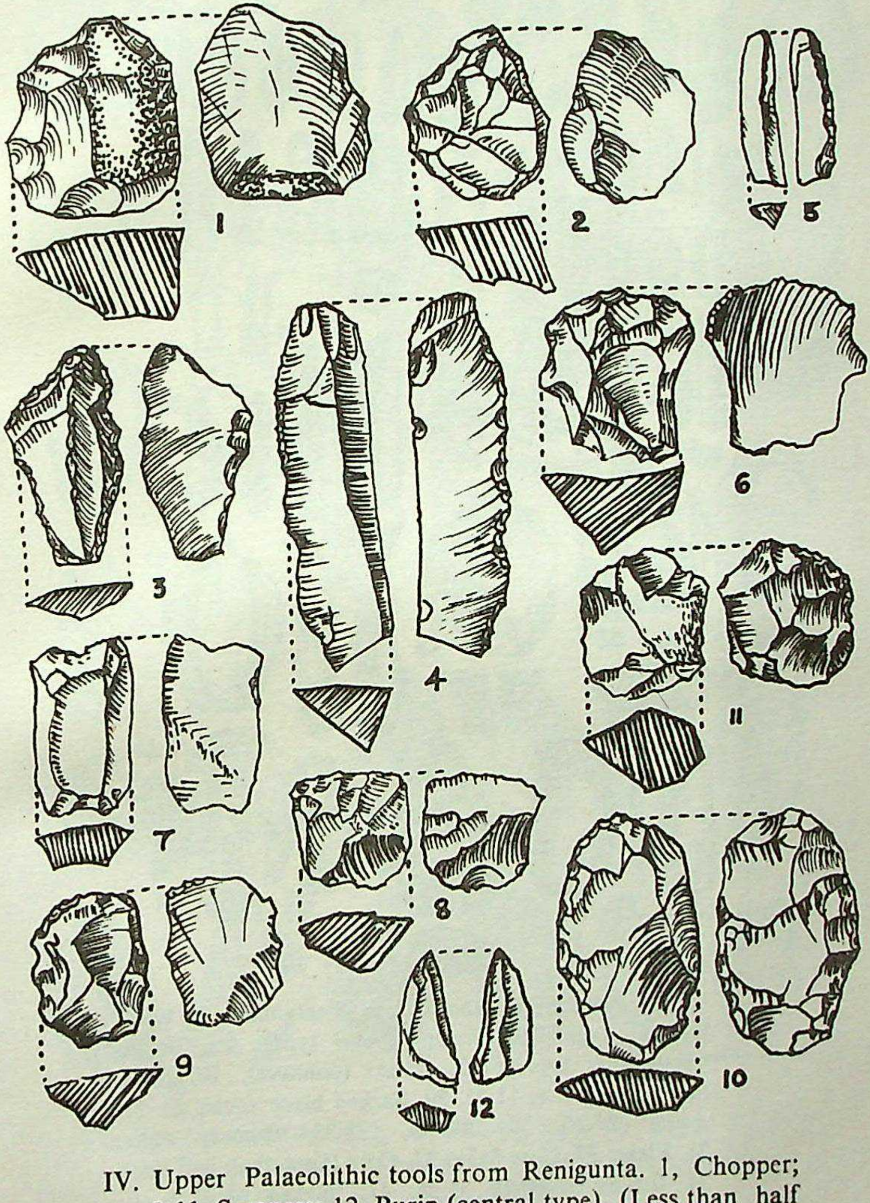
Yamuna
Ganga
Son
Budha Pushkar
Belan Valley
Jogdah
Baboori
Bhimbetka
Bamni
Visadi
Narmada
Bhadne
Tapi
Patne
Nevasa
Kandivli
Dhavalpuri
Godavari
Nagarjunakonda
Bhima
Yadwad
Yerragondapalem
Betam-
cherla
Vemula
Billasurgam
Renigunta
1
2
SITES
CLASSICAL
SUB-CLASSICAL
Salvadgi
Benbal
Hunsgi
Gulbal
Meralbhavi
Shorapur
Doab
sites
Saldih
Jamdih
Dumdumi
Domgara
Barudih
Kenbua
Ukri
Dugni
T. Dungri
Gopalpur
Gual
Gual
Bokna
Nula
Thakura
sites
in
Singbhum Dist.

II. (Adopted from Sankalia, Fig. 55 a).



III. Fig. 1, 2, 3 : Cleavers from S. Rhodesia, Tabelbala, N. Africa, and Giddalur A.
Fig. 4 and 5 : Burins from Gundla-Brahmesvaram and Nandi-Kanama Pass.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IV. Upper Palaeolithic tools from Renigunta. 1, Chopper; 2-11, Scrapers; 12, Burin (central type). (Less than half size).
(Adopted from Sankalia, Fig. 55 b).

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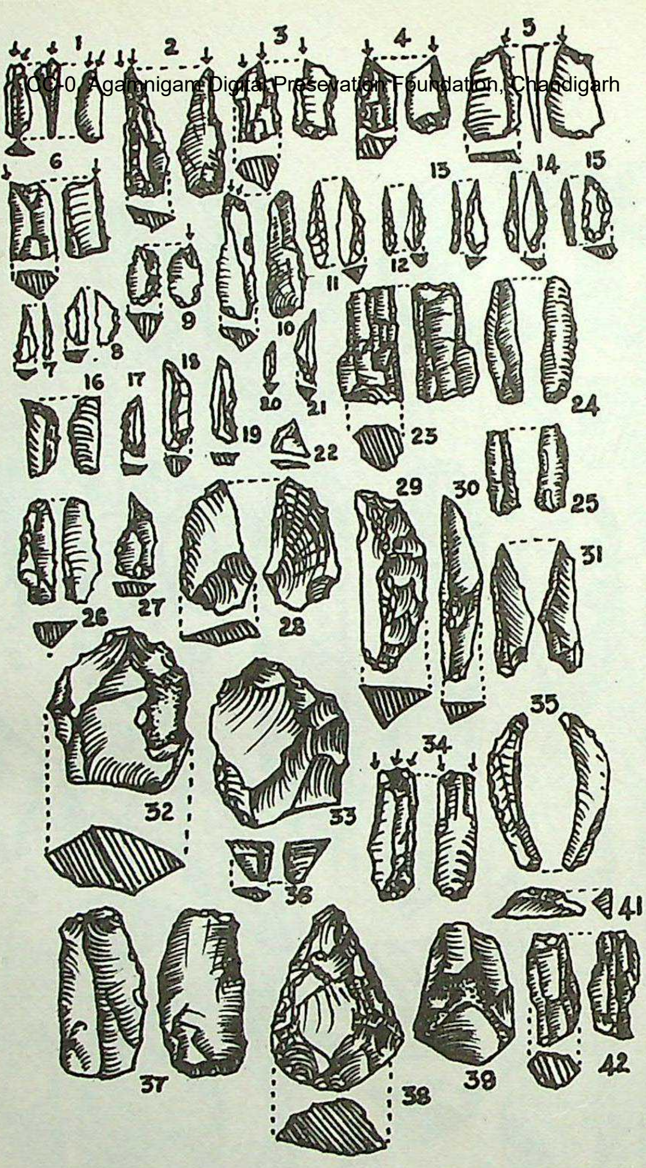
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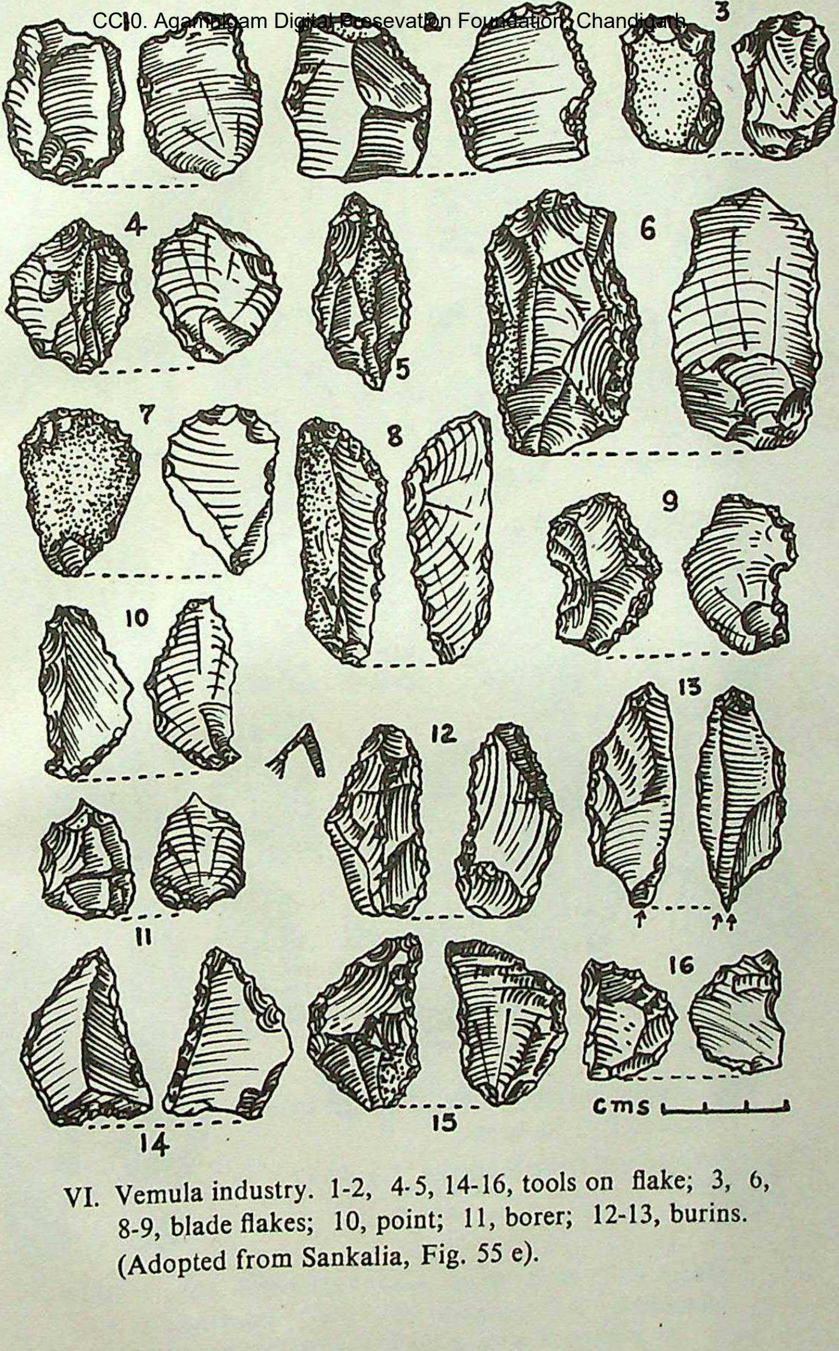
V. Upper Palaeolithic tools from Renigunta. 1, Burin (central type); 2-3, Burins (bevel type); 4-5, Burins (rectangular type); 6, 9, Burins (concave); 10, Burin (unfinished); 7-8, 11-21, 29, Backed blade tools; 22, 27, Awls; 24-26, 30, Blades; 32-33, Primary flake; 28, Flake; 37, Core flake; 23, Core (Less than half size); 34, Burins (convex); 35-36, 41, Backed Blade tools; 38, Points; 31, Blade; 39, 42, Cores (Half size). (Adopted from Sankalia, Figs. 55 c & 55 d).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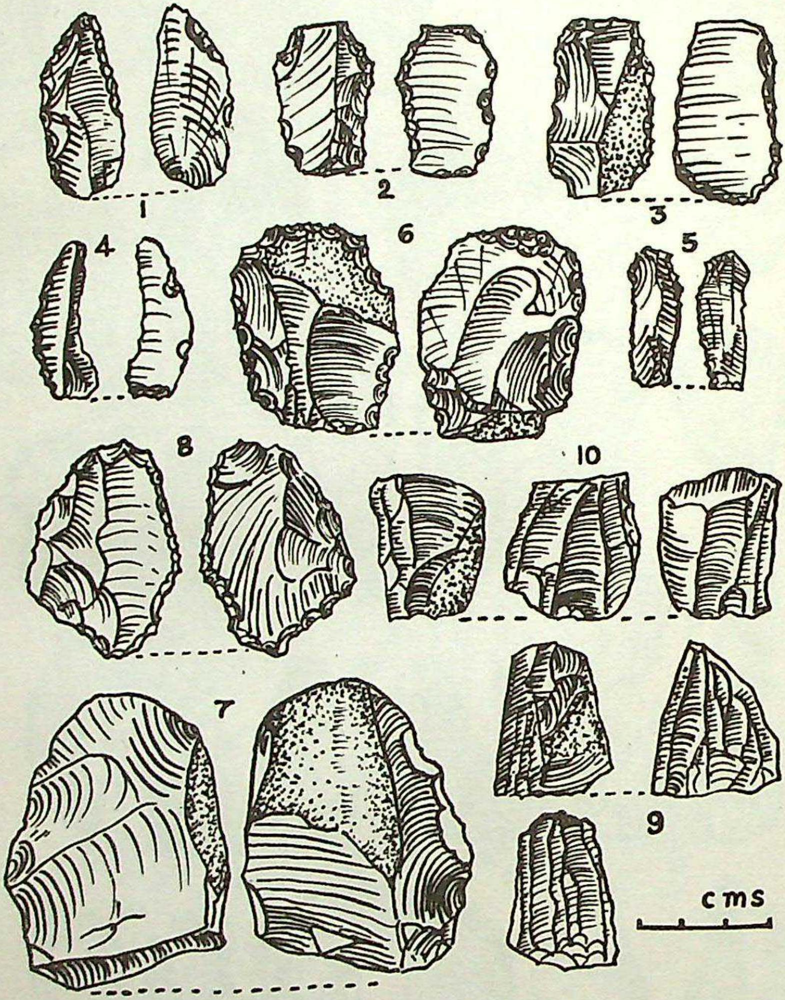
16
cms

VI. Vemula industry. 1-2, 4-5, 14-16, tools on flake; 3, 6, 8-9, blade flakes; 10, point; 11, borer; 12-13, burins. (Adopted from Sankalia, Fig. 55 e).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cms

VII. Vemula industry. 1-5, retouched blades; 6, 8, retouched flakes; 7, 9-10, cores.

(Adopted from Sankalia, Fig. 55 f).

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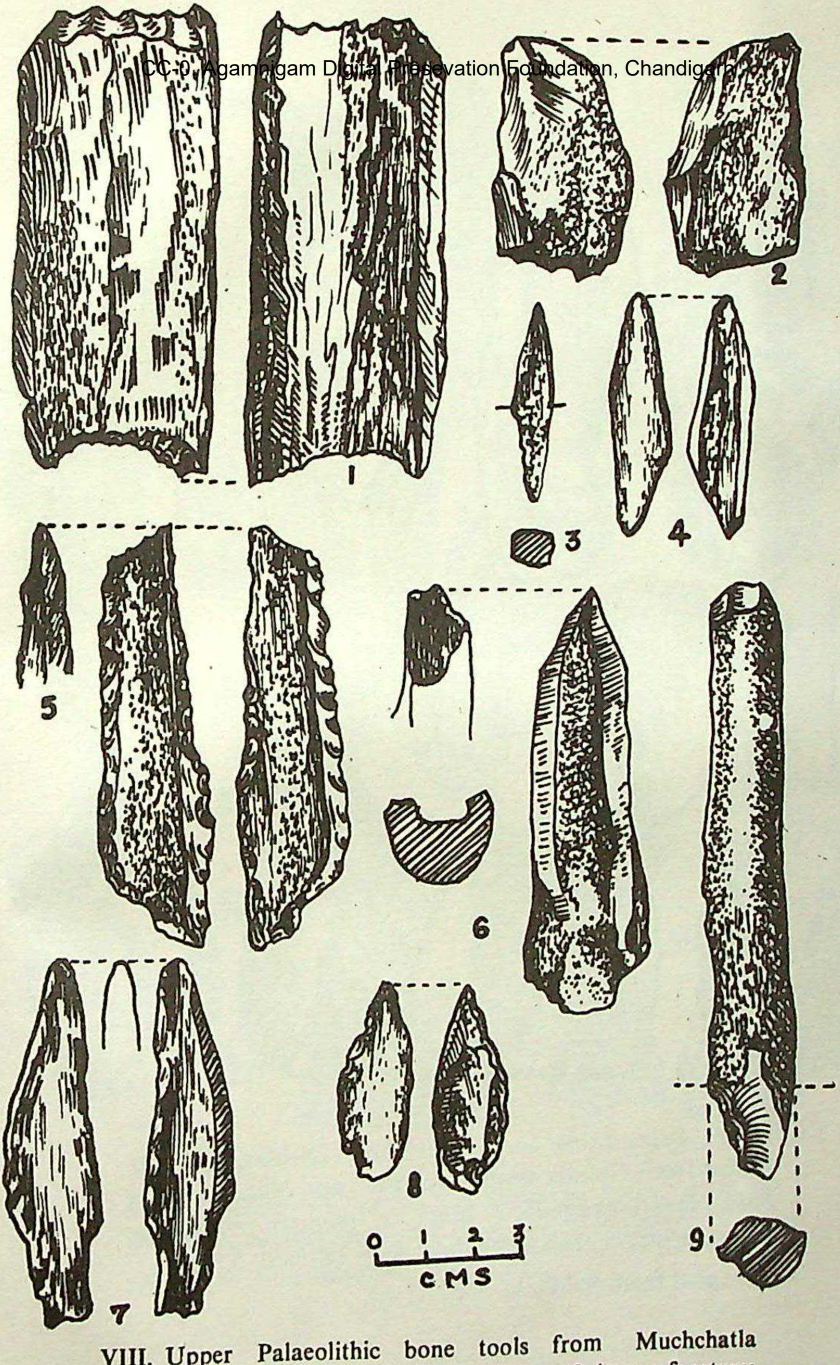
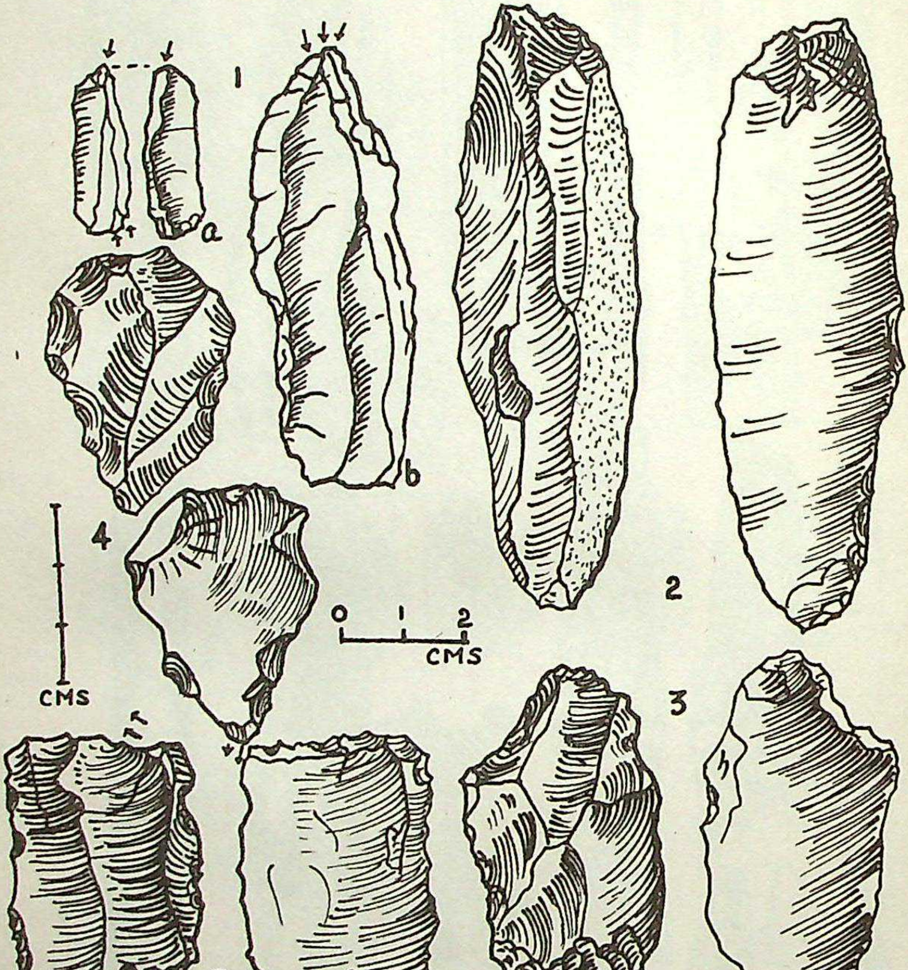
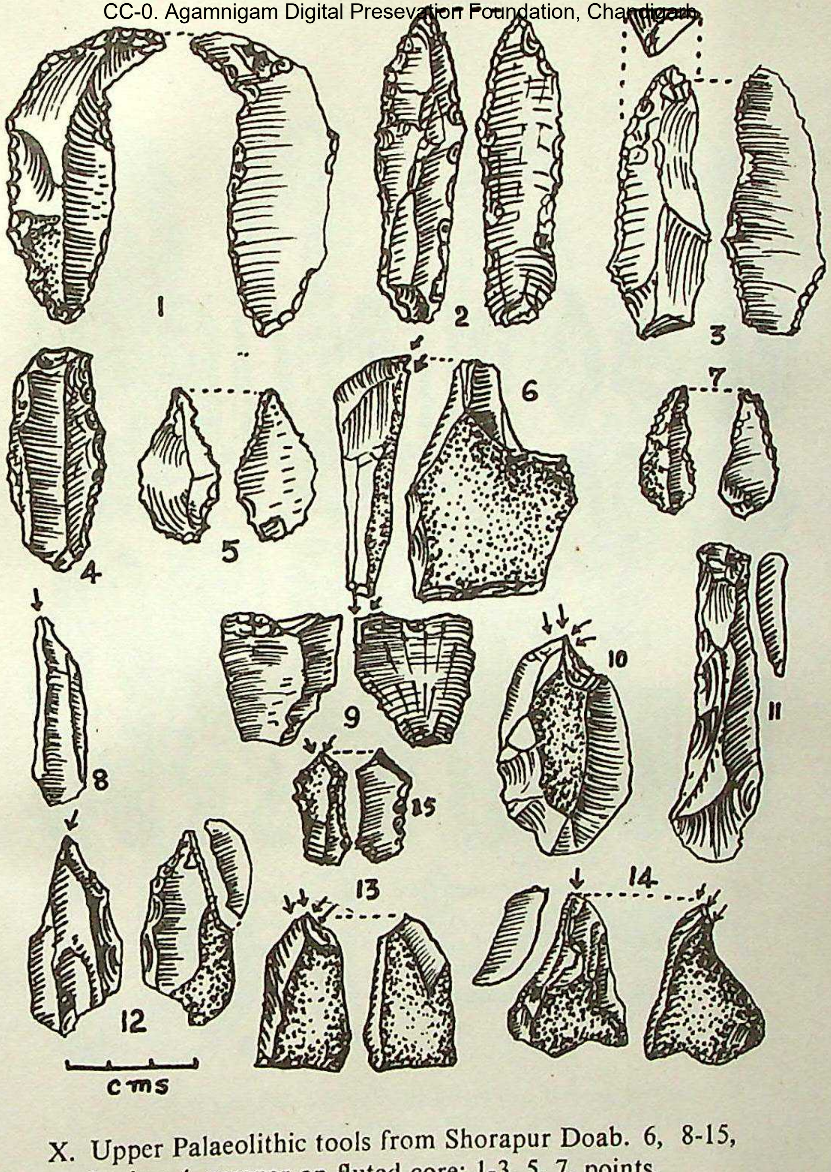


VIII. Upper Palaeolithic bone tools from Muchchatla Chintamanu Gavi. 1-2, scrapers; 3-4, perforators; 5-6, chisels; 7, tanged point; 8, barb; 9, spatula.

(Adopted from Sankalia, Fig. 55 g).



IX. Upper Palaeolithic tools, Kurnool District. 1a & b, Burins from Gundla-Brahmesvaram and Nandikanama Pass, Nagarjunakonda; 2, blade; 3, medium to deminutive scrapers; 4, triangular flake with retouch; 5, Burin. (Adopted from Sankalia, Fig. 55 h).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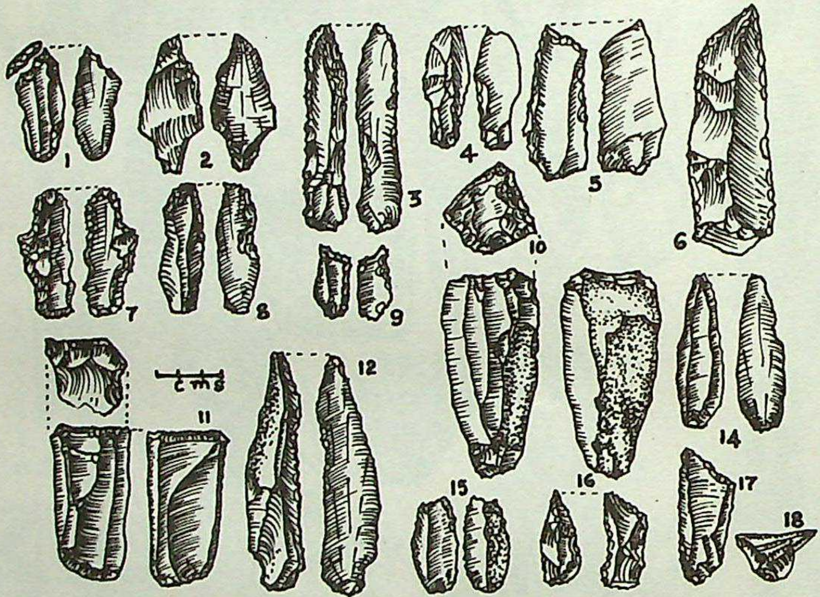
12
cms

X. Upper Palaeolithic tools from Shorapur Doab. 6, 8-15, burins; 4, scraper on fluted core; 1-3, 5, 7, points. (Adopted from Sankalia, Fig. 55 k).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cms
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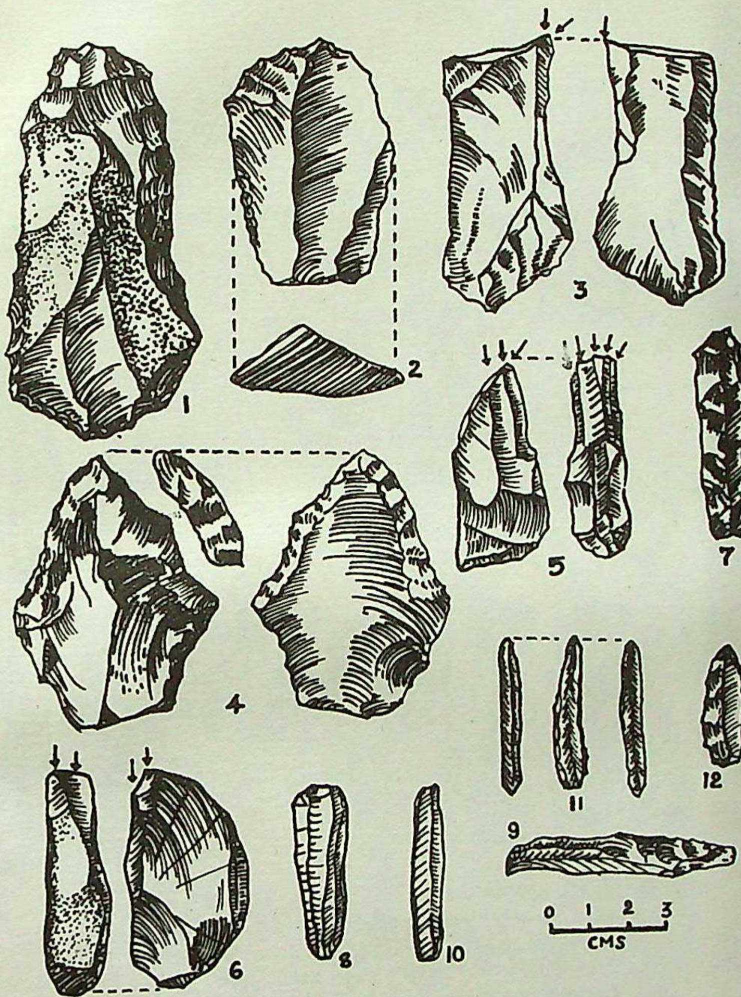
XI. Upper Palaeolithic tools from Shorapur Doab. 1, point; 2-4, tanged points; 5, 9, borers; 7-8, multiple tools; 10-11, fluted cores; 6, 12, 14-15, 17, unretouched blades; 16, 18, core rejuvenation flakes.

(Adopted from Sankalia, Fig. 55 l).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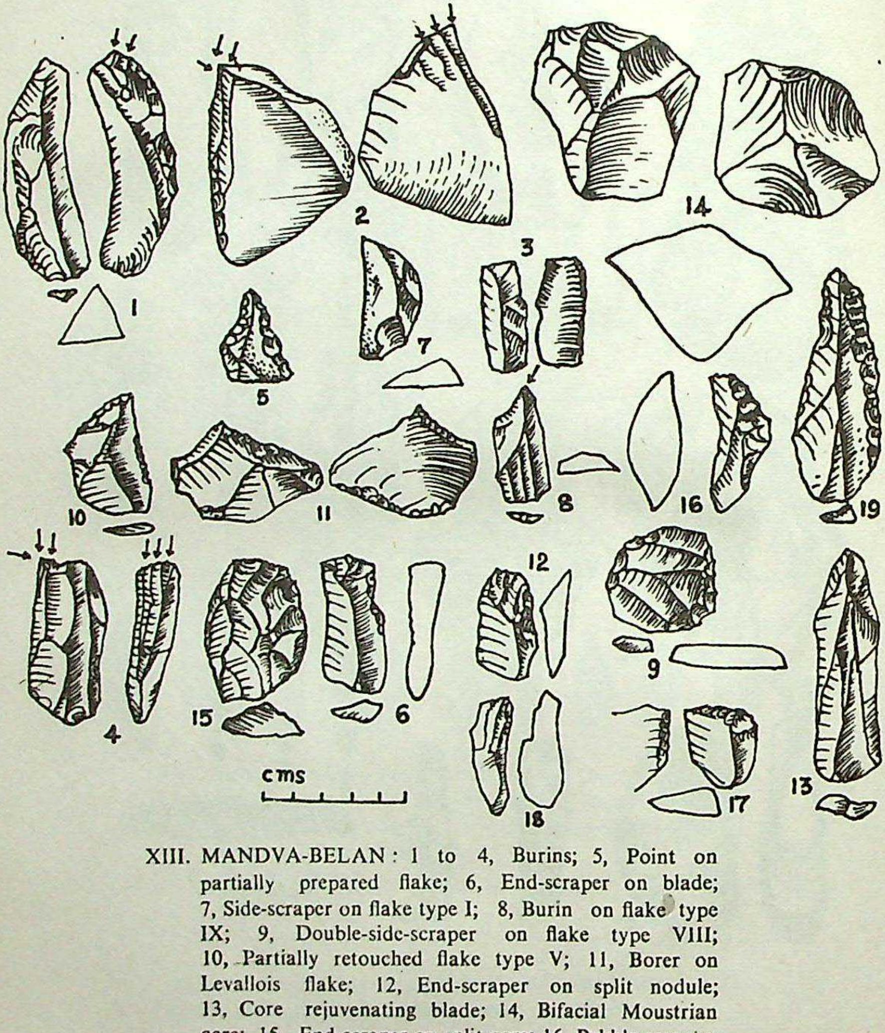
0 1 2 3
CMS

XII. Upper Palaeolithic tools, Bhimbetka. 1-2, end scrapers; 3, 6, burins; 4, point; Patne. 5, burin; 7-12 blade tools.

(Adopted from Sankalia, Fig. 55 m).



XIII. MANDVA-BELAN : 1 to 4, Burins; 5, Point on partially prepared flake; 6, End-scraper on blade; 7, Side-scraper on flake type I; 8, Burin on flake type IX; 9, Double-side-scraper on flake type VIII; 10, Partially retouched flake type V; 11, Borer on Levallois flake; 12, End-scraper on split nodule; 13, Core rejuvenating blade; 14, Bifacial Moustrian core; 15, End-scraper on split core; 16, Pebble scraper; 17, Angle-scraper on prepared flake; 18, Burin on core; 19, Backed blade.

(Adopted from Vidula Jayaswal, Pl. LI).

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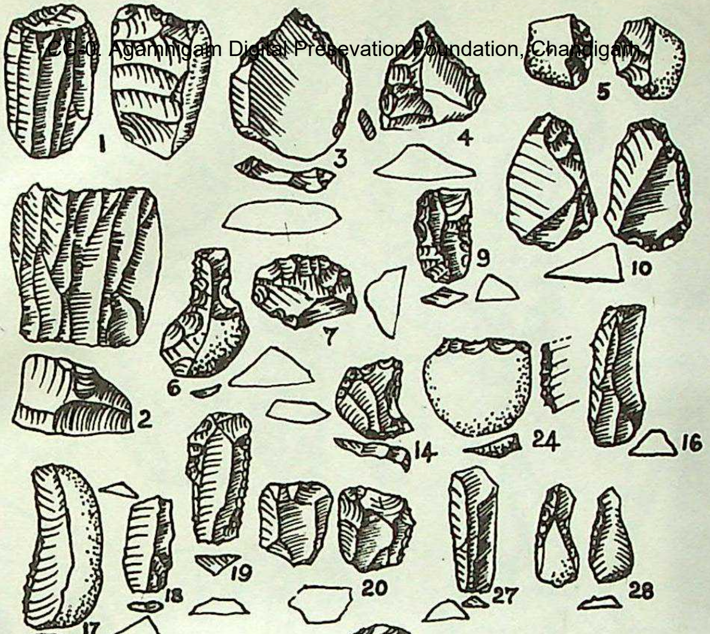

XIV. UPPER SON VALLEY : 1 & 2, Bladelet core; 3 & 4, Point on flake; 5, Small chopping-tool; 6, side-scraper on flake type V; 7, End-scraper; 9, Double-side-scraper on flake type V; 10, End-scraper on core; 11 & 12, Blades; 13, Partially retouched Levallois flake; 14, Point on flake type IX; 15, Burin on core rejuvenating blade; 16 to 19, Blades; 20, Prepared core; 21, Partially retouched flake type VIII; 22, Core rejuvenating blade; 23 & 25, Scraper on prepared flake; 24, Angle-scraper on prepared flake; 26, Retouched Levallois point; 27 & 28, Blade; 29, Point on unprepared flake; 30, Burin on core rejuvenating blade.

(Adopted from Vidula Jayaswal, Pl. LII).

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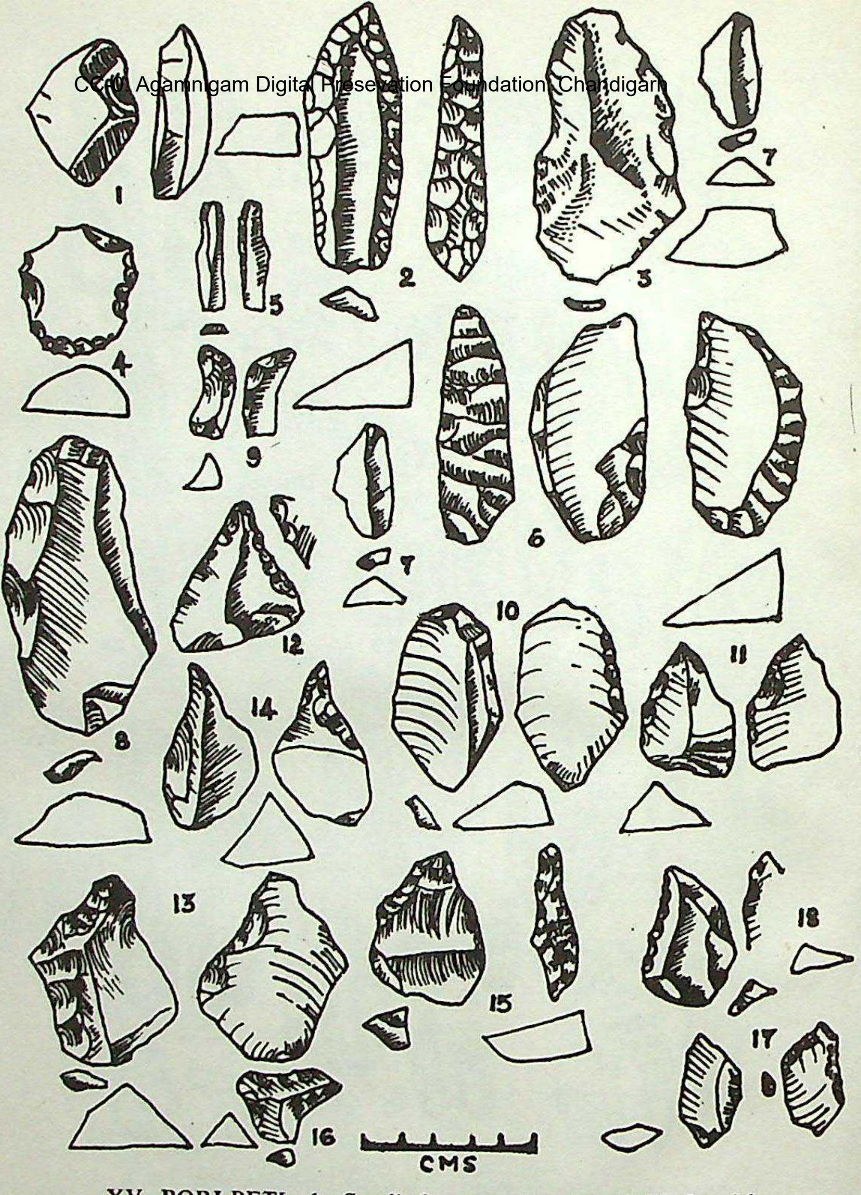
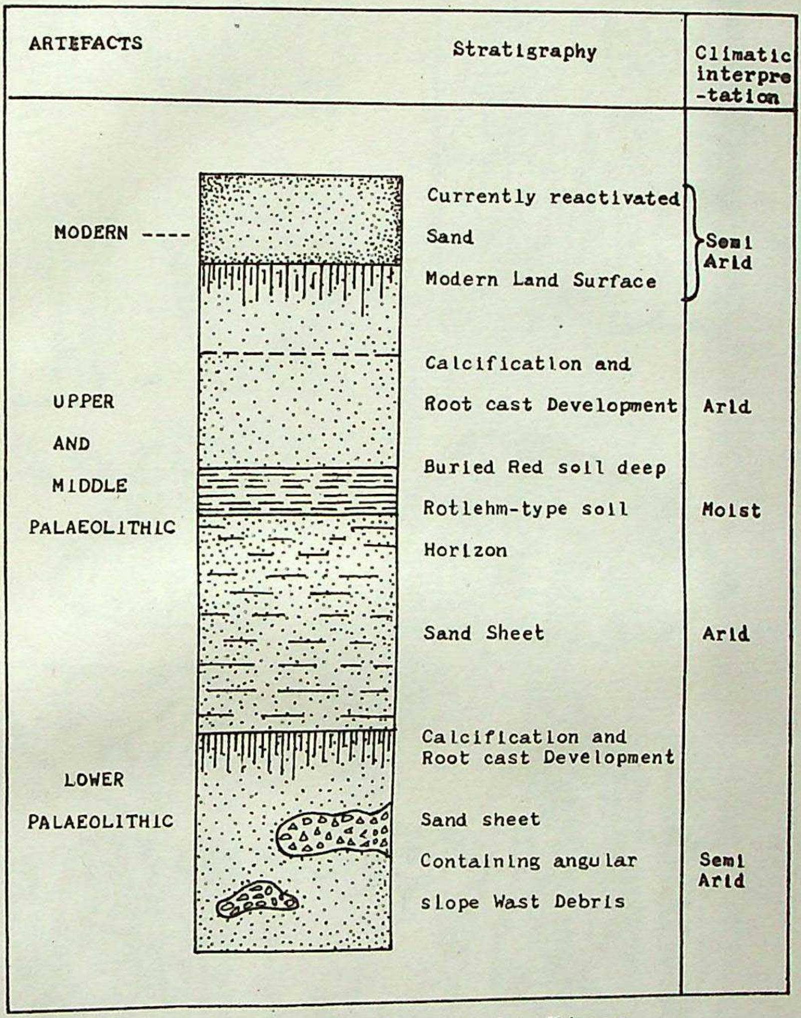
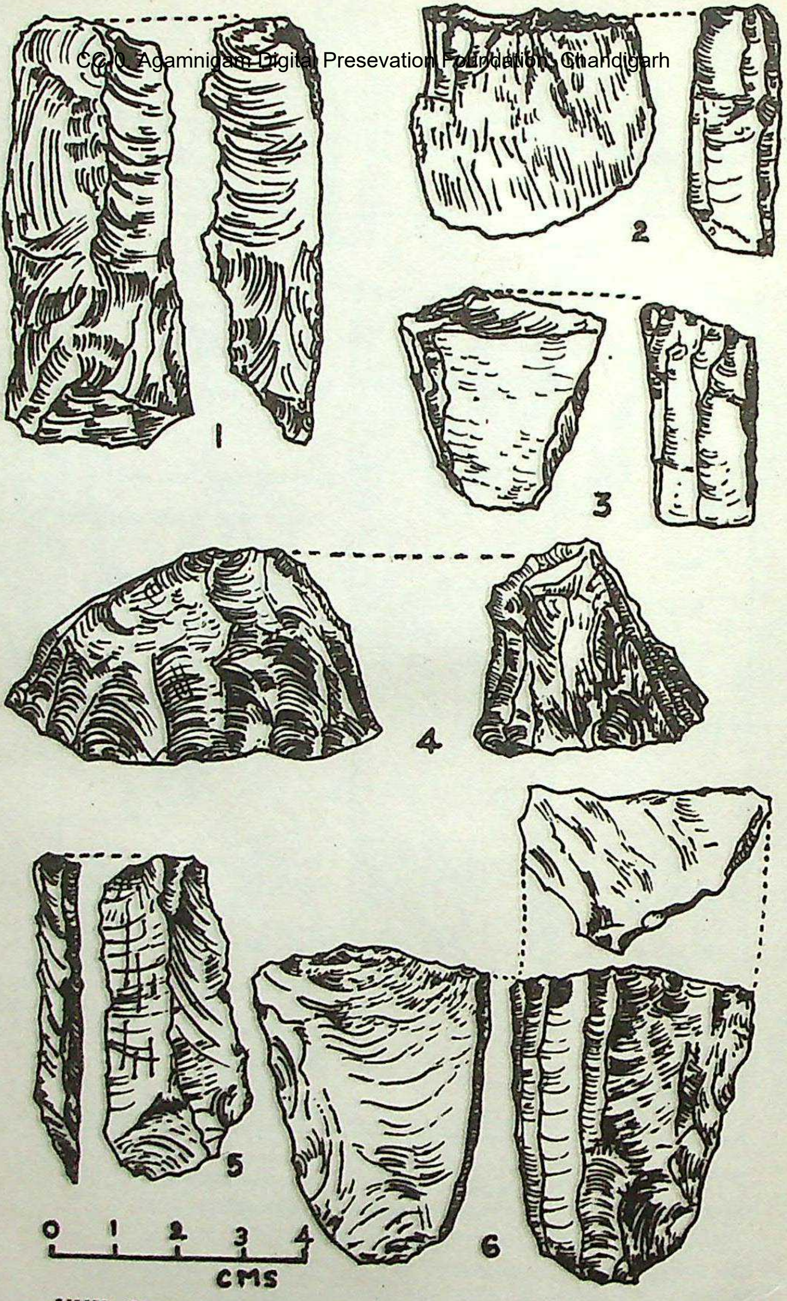


XV. BORI-BETI : 1, Small chopper; 2, Backed Blade with marginal retouch; 3, Double-side-scraper on flake type VIII; 4, Side-scraper on unprepared flake; 5, Marginally retouched blade; 6, Feddermasser; 7, Flake type V; 8, Side-scraper on flake type VII; 9, Core rejuvenating blade an edge blunted; 10, End-scraper on flake type VIII; 11 & 12, Point on prepared flakes; 13, Double-side-scraper; 14, Borers; 15, Knife on flake type IX; 16 & 17, Angle-scraper on prepared flakes; 18, Levallois point.

(Adopted from Vidula Jayaswal, Pl. LIII).

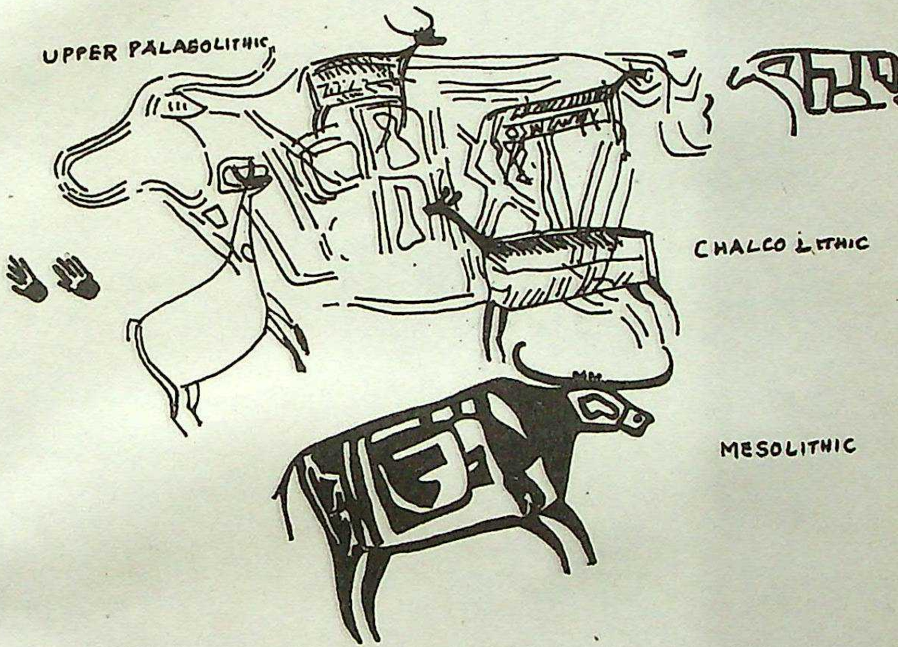

ARTEFACTS
Stratigraphy
Climatic interpre-tation
MODERN
Currently reactivated
Sand
Modern Land Surface
Semi Arid
UPPER AND MIDDLE PALAEOLITHIC
Calcification and
Root cast Development
Arid
Buried Red soil deep
Rotlehm-type soil
Horizon
Moist
Sand Sheet
Arid
LOWER PALAEOLITHIC
Calcification and
Root cast Development
Sand sheet
Containing angular
slope Wast Debris
Semi Arid

XVI. A Schematic Interpretation of the Late Pleistocene Stratigraphic and Cultural Sequence at Pushkar. (Dr. (Mrs.) Bridget Allchin and Andrew Goudie).

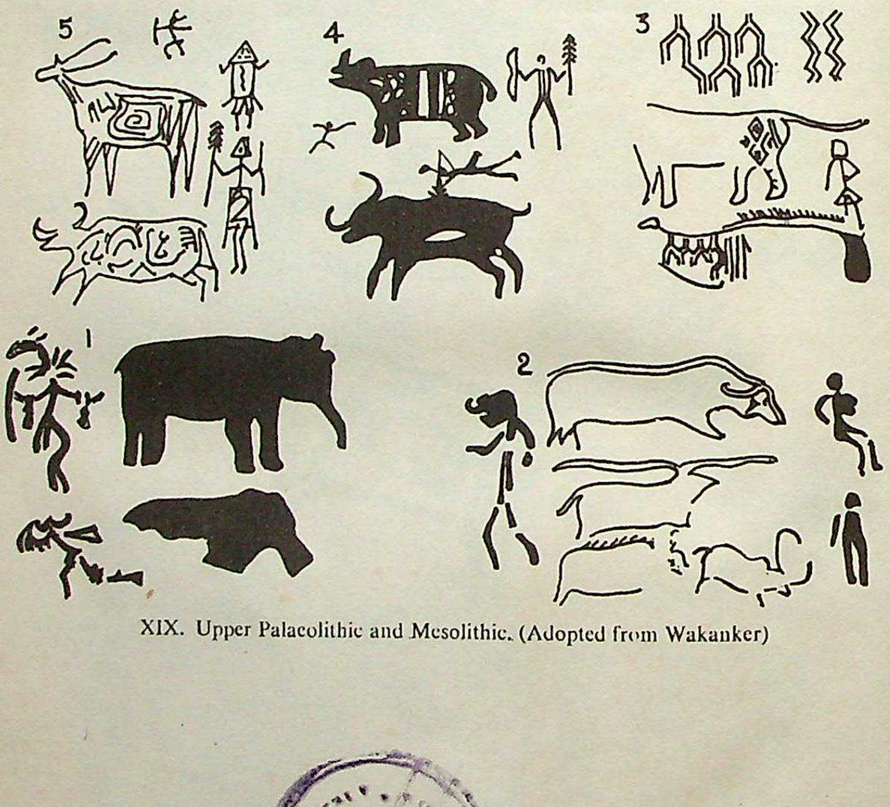


XVII. Upper Palaeolithic artefacts from Budha Pushkar; Nos. 1 and 5, blades; Nos. 2 and 3, burins; No. 4, keeled scraper; No. 6, blade core.

(Adopted from Dr. B. Allchin and A. Goudie, Fig. 24).


UPPER PALAEOLITHIC
CHALCO LITHIC
MESOLITHIC

XVIII. Superimposition of Paintings Bhim. III E-12 (Adopted from Wakankar).



XIX. Upper Palaeolithic and Mesolithic. (Adopted from Wakanker)

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